

AN ANALYSIS OF AGE AND  
PERFORMANCE AMONG COMMUNICATIONS  
PERSONNEL

James M. Carter

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# NAVAL POSTGRADUATE SCHOOL

## Monterey, California



# THESIS

AN ANALYSIS OF AGE AND  
PERFORMANCE AMONG COMMUNICATIONS  
PERSONNEL

by

James M. Carter .

September 1975

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)  This thesis utilized longitudinal and performance appraisal information on 182 naval telecommunications personnel from two Naval Communication Stations and an Attack Carrier to develop a career development model and high performance characteristics. High correlation between age and pay-grade, mean time between advancements, and years since last advancement; and weak correlation between age and job index, and evaluation scores were noted. When scored on an "all or nothing" basis the 31-36 year age-group		



20.

received a significantly higher mean score on the evaluation questionnaire than the 37-42 year age-group. This may be interpreted as early low performance among the personnel sampled for this study.







An Analysis of Age and  
Performance Among Communications  
Personnel

by

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Lieutenant Commander, United States Navy  
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Submitted in partial fulfillment of the  
requirements for the degree of

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## ABSTRACT

THIS THESIS UTILIZED LONGITUDINAL AND PERFORMANCE APPRAISAL INFORMATION ON 182 NAVAL TELECOMMUNICATIONS PERSONNEL FROM TWO NAVAL COMMUNICATION STATIONS AND AN ATTACK CARRIER TO DEVELOP A CAREER DEVELOPMENT MODEL AND HIGH PERFORMANCE CHARACTERISTICS. HIGH CORRELATION BETWEEN AGE AND PAYGRADE, MEAN TIME BETWEEN ADVANCEMENTS, AND YEARS SINCE LAST ADVANCEMENT; AND WEAK CORRELATION BETWEEN AGE AND JOB INDEX, AND EVALUATION SCORES WERE NOTED. WHEN SCORED ON AN "ALL OR NOTHING" BASIS THE 31-36 YEAR AGE-GROUP RECEIVED A SIGNIFICANTLY HIGHER MEAN SCORE ON THE EVALUATION QUESTIONNAIRE THAN THE 37-42 YEAR AGE-GROUP. THIS MAY BE INTERPRETATED AS EARLY LOW PERFORMANCE AMONG THE PERSONNEL SAMPLED FOR THIS STUDY.



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THE ATTENTION TO DETAIL AND THE TIME-CONSUMING EFFORTS OF THE TELECOMMUNICATIONS PERSONNEL OF NAVAL COMMUNICATION STATIONS HONOLULU, ITALY, AND SAN FRANCISCO, AND USS RANGER IN COMPLETING THE QUESTIONNAIRES USED IN THIS STUDY ARE ACKNOWLEDGED. THE ENCOURAGEMENT AND ENTHUSIASTIC ADMINISTRATION OF THE DATA COLLECTION PHASE BY THE FOLLOWING PERSONNEL IS GRATEFULLY ACKNOWLEDGED: CAPTAIN W.H. LYNCH, USN, COMMANDING OFFICER, NAVAL COMMUNICATION STATION SAN FRANCISCO; CAPTAIN W.J. LONGHI, USN, FORMER COMMANDING OFFICER, NAVAL COMMUNICATION STATION ITALY; LIEUTENANT COMMANDER D.W. STROEBEL, USN CAMS OFFICER, NAVAL COMMUNICATION STATION HONOLULU; AND LIEUTENANT COMMANDER L.D. MILIOTI, USN, FORMER COMMUNICATION OFFICER, USS RANGER (CVA 61).



## 1. INTRODUCTION

TWO TRENDS IN THE SOCIETY IN GENERAL, AND NAVAL COMMUNICATIONS IN PARTICULAR, HIGHLIGHT THE IMPORTANCE OF THE RELATIONSHIP BETWEEN AGE AND PERFORMANCE AMONG COMMUNICATIONS PERSONNEL. ONE, THE RATE AT WHICH SCIENTIFIC KNOWLEDGE IS BEING GENERATED AND AT WHICH THIS INFORMATION IS BEING TRANSFORMED INTO APPLICATION PRODUCTS, INSTRUMENTS, AND PROCEDURES IS ACCELERATING. THERE IS SOME EVIDENCE THAT THIS SHIFT HAS BEEN ACCOMPANIED BY AN INCREASE IN THE RATE OF OBSOLESCENCE OF TECHNICIANS AND ENGINEERS. THIS IS PARTICULARLY NOTEWORTHY FOR THE PROFESSIONAL NAVAL COMMUNICATOR. THE TECHNOLOGY HAS PROGRESSED FROM SPARK-GAP TRANSMISSION THROUGH MULTIPLEXED, SINGLE-SIDEBAND COMMUNICATIONS USING TORN TAPE RELAY PROCEDURES TO THE COMMUNICATIONS SYSTEMS OF THE 1970'S WITH AUTOMATED COMMAND AND CONTROL SYSTEMS AND MESSAGE SWITCHING USING SATELLITE TRANSMISSION MEDIA.

THE SECOND TREND IS THE INCREASING AGE OF THE POPULATION OF NAVAL COMMUNICATORS. FOR EXAMPLE, AN INITIAL SAMPLE OF NAVAL COMMUNICATORS USED IN THIS STUDY HAD AN AVERAGE AGE OF 35 YEARS. ALTHOUGH HARDLY AN ADVANCED AGE, PROPOSED CHANGES IN ADVANCEMENT OPPORTUNITIES AND RETIREMENT POLICIES MAY RESULT IN LONGER SERVICE WHICH WILL INCREASE THE AVERAGE AGE OF SERVICE PERSONNEL. THIS INCREASING AGE MAY HAVE IMPORTANT IMPLICATIONS FOR PERFORMANCE OF THE NAVY'S COMMAND AND CONTROL TELECOMMUNICATIONS SYSTEM.

IN DISCUSSING THE PURPOSE OF THIS THESIS IT MAY BE USEFUL TO FIRST DISCUSS WHAT IT IS NOT INTENDED TO PRODUCE. IT IS NOT INTENDED TO BE USED IN EVALUATING INDIVIDUAL PERFORMANCE BY USING NEW CRITERIA. INDIVIDUAL PERFORMANCE EVALUATIONS USED WITHIN THE DEPARTMENT OF THE NAVY ARE ASSUMED TO BE ADEQUATE INSTRUMENTS FOR USE IN MEASURING AN





## INDIVIDUAL'S PERFORMANCE.

THE RESULTS OF THE THESIS ARE NOT INTENDED FOR USE IN MAKING EITHER BILLET ASSIGNMENTS WITHIN THE NAVY OR TASK ASSIGNMENTS WITHIN A COMMAND. SUCH ASSIGNMENTS HAVE TRADITIONALLY BEEN FILLED BY PERSONNEL BASED ON THE NEEDS OF THE SERVICE AND THE TASKS TO BE ACCOMPLISHED AT THE LOCAL COMMAND LEVEL. IT IS DOUBTFUL WHETHER INFORMATION COLLECTED VIA THE QUESTIONNAIRES USED IN THIS EFFORT WOULD PROVIDE THE MULTIDIMENSIONAL INFORMATION NEEDED TO MAKE BILLET ASSIGNMENTS WITHIN THE NAVY. THE QUESTIONNAIRE PROVIDES FACTUAL DATA ON PAST BILLET ASSIGNMENTS WITHOUT EVALUATIVE INFORMATION ON PERFORMANCE IN THOSE ASSIGNMENTS. IT IS ASSUMED THAT ONCE AN ASSIGNMENT HAS BEEN MADE THROUGH THE VARIOUS PROCESSES OF THE BUREAU OF NAVAL PERSONNEL, THAT THE INDIVIDUALS SELECTED ARE BY AND LARGE HIGHLY QUALIFIED TO ASSUME THE RESPONSIBILITIES AT THE LOCAL COMMAND LEVEL.

THE RESULTS OF THE THESIS ARE FURTHER NOT INTENDED TO BE USED AS A SCREENING MECHANISM BY PERFORMANCE REVIEW BOARDS. THE CURRENT METHOD OF REVIEWING PERFORMANCE EVALUATIONS AND OBJECTIVE INFORMATION FROM ADVANCEMENT EXAMINATIONS AND PROMOTION BOARDS IS CONSIDERED AN ADEQUATE PROCEDURE FOR DETERMINING POTENTIAL FOR CONTINUED NAVAL SERVICE.

THE PURPOSES OF THE THESIS ARE THREEFOLD: ONE; CONDUCT A LONGITUDINAL ANALYSIS OF AGE AND BILLET ASSIGNMENTS OF COMMUNICATIONS PERSONNEL. TWO, FROM THE ANALYSIS OF THIS LONGITUDINAL INFORMATION, VERIFY DALTON AND THOMPSON'S CAREER DEVELOPMENT STAGES AND HIGH PERFORMANCE CHARACTERISTICS AS APPLIED TO NAVAL TELECOMMUNICATIONS PERSONNEL. THIRDLY, RELATE SUPERVISOR RATINGS TO THOSE HIGH PERFORMANCE CHARACTERISTICS.

THE SPECIFIC NATURE OF THE PROBLEM AND QUESTIONS TO BE EXPLORED BY THIS STUDY WILL BE DISCUSSED IN THE NEXT SECTION. THIS WILL INCLUDE A REVIEW OF THE FINDINGS OF STUDIES OF THE AGE-PERFORMANCE RELATIONSHIP IN THE CIVILIAN COMMUNITY. THE IMPORTANCE OF UNDERSTANDING THE



AGE-PERFORMANCE RELATIONSHIP FOR NAVAL COMMUNICATIONS PERSONNEL WILL ALSO BE DISCUSSED. SUBSEQUENT SECTIONS WILL DISCUSS THE DESIGN OF THE STUDY AND REPORT THE FINDINGS OF THE ANALYSES. THE FINAL SECTIONS WILL PROVIDE THE CONCLUSIONS.



## II. NATURE OF THE PROBLEM

### A. OBSOLESCENCE DEFINED

THE NATURE OF THE PROBLEM DISCUSSED BY THIS STUDY IS ONE OF OBSOLESCENCE. TO DATE ONLY OPERATIONAL AND DESCRIPTIVE DEFINITIONS HAVE BEEN PRESENTED TO CLARIFY THE PROBLEM. "ACCORDING TO SCHUMAKER, OBSOLESCENCE IS A REDUCTION IN TECHNICAL EFFECTIVENESS RESULTING FROM A LACK OF KNOWLEDGE OF THE NEW TECHNIQUES AND OF ENTIRELY NEW TECHNOLOGIES THAT HAVE DEVELOPED SINCE THE ACQUISITION OF THE INDIVIDUAL'S EDUCATION." (DUBIN) IN THE FIELD OF ENGINEERING THE WORD OBSOLESCENCE HAS COME TO MEAN THE EROSION OF THE APPLICABILITY OF KNOWLEDGE. "BURACK AND PATI FOUND THAT OBSOLESCENCE EXISTS WHEN THERE IS A DISCREPANCY BETWEEN JOB NEEDS AND MANAGERIAL OR PROFESSIONAL CAPABILITIES AS A RESULT OF INNOVATION, OR WHEN THE KNOWLEDGE AND SKILLS OF A MANAGER ARE NOT SUFFICIENT TO ACCOMPLISH HIS JOB." (DUBIN) MALI HAS ADVANCED A DEFINITION OF OBSOLESCENCE IN THE FORM OF AN OBSOLESCENCE INDEX:

$$OI = \frac{\text{CURRENT KNOWLEDGE UNDERSTOOD BY ENGINEERS}}{\text{CURRENT KNOWLEDGE IN THE FIELD}}$$

FOR THE PURPOSES OF THIS STUDY THE DESCRIPTIVE DEFINITION OFFERED BY BURACK AND PATI WILL BE EMPLOYED.

### B. OTHER WAYS TO STATE THE NATURE OF THE PROBLEM.

SOME THOUGHT PROVOKING QUESTIONS MAY PROVIDE A BASIS FOR STATING THE INHERENT PROBLEM IN ANOTHER WAY AND STIMULATE FURTHER STUDY:

1. IS THERE AN AGE AT WHICH KNOWLEDGE OF NAVAL COMMUNICATIONS PEAKS AND THEN DECLINES? THIS OF COURSE WOULD



EMPLOY SOME INDEX SUCH AS MALI'S IN DETERMINING AN ANSWER.

2. DOES INDIVIDUAL PERFORMANCE TEND TO RISE AND FALL WITH INCREASING AGE, OR DO THE CURVES RESULT FROM SAMPLING DIFFERENCES?

3. DO YOUNG HIGH PERFORMERS BECOME OLDER LOW PERFORMERS OR DO INDIVIDUAL'S TEND TO MAINTAIN THEIR RELATIVE PERFORMANCE LEVELS THROUGHOUT THEIR CAREER? THE LATTER MAY BE A TENANT OF THE NAVAL PROMOTION SCHEME.

4. WHAT IS THE RELATIONSHIP BETWEEN AGE AND JOB ASSIGNMENT? DO YOUNGER PERSONNEL RECEIVE THE MOST CHALLENGING ASSIGNMENTS?

A. DO EARLY ASSIGNMENTS, TRAINING AND EXPERIENCE PREDICT LATER PERFORMANCE LEVELS?

B. DOES THE NATURE OF CURRENT JOB ASSIGNMENTS, IE. CHALLENGING VERSUS ROUTINE FUNCTIONS, HELP TO PREDICT PERFORMANCE LEVEL AND IS THE CURRENT JOB ASSIGNMENT RELATED TO AGE?

5. IS A PERSON JUDGED BY DIFFERENT CRITERIA AT DIFFERENT STAGES OF HIS CAREER, AND IS PERFORMANCE AT DIFFERENT AGE LEVELS DETERMINED BY HIS ABILITY TO MEET NEW CRITERIA?

IT IS NOT EXPECTED THAT THE CURRENT STUDY WILL PROVIDE DEFINITIVE ANSWERS TO THESE COMPLEX QUESTIONS. SOME OF THE FINDINGS IN OTHER FIELDS, HOWEVER, MAY SHED SOME LIGHT ON THE COMPLEX PROBLEM OF CAREER DEVELOPMENT AND PERFORMANCE AS APPLIED TO THE PERSONNEL PERFORMING IN THE FIELD OF NAVAL TELECOMMUNICATIONS.

## C. FINDINGS IN OTHER FIELDS.

### 1. LEHMAN'S CONCLUSIONS:

LEHMAN'S STUDY IN THE EARLY 1950'S OF AWARD WINNING ACHIEVEMENT STIMULATED INTEREST IN THE RELATIONSHIP BETWEEN AGE AND PERFORMANCE. HIS STUDY CONCENTRATED ON THE MOST EMINENT SCIENTISTS, WRITERS, COMPOSERS, AND POLITICAL LEADERS, THUS FOCUSING ON A SMALL BUT ELITE GROUP. HE FOUND





THAT THE MAXIMUM AVERAGE AGE OF HIGHLY SUPERIOR PRODUCTION AMONG ENGINEERS OCCURRED NOT LATER THAN DURING THE PERIOD WHEN THEY WERE FROM 30 TO 34 YEARS OF AGE.

LEHMAN CONCLUDED THAT:

"FOR MOST TYPES OF CREATIVE WORK THE FOLLOWING GENERALIZATIONS HAVE BEEN DERIVED. WITHIN ANY GIVEN FIELD OF CREATIVE ENDEAVOR: (1) THE MAXIMUM PRODUCTION RATE FOR OUTPUT OF HIGHEST QUALITY USUALLY OCCURS AT AN EARLIER AGE THAN THE MAXIMUM RATE FOR LESS DISTINGUISHED WORKS BY THE SAME INDIVIDUAL; (2) THE RATE OF GOOD PRODUCTION USUALLY DOES NOT CHANGE MUCH IN THE MIDDLE YEARS AND THE DECLINE, WHEN IT COMES, IS GRADUAL AT ALL THE OLDER AGES --- MUCH MORE GRADUAL THAN ITS ONSET IN THE LATE TEENS OR EARLY TWENTIES; (3) PRODUCTION OF HIGHEST QUALITY TENDS TO FALL OFF NOT ONLY AT AN EARLIER AGE BUT ALSO AT A MORE RAPID RATE THAN DOES OUTPUT OF LESSER MERIT; AND BECAUSE THE STATISTICAL DISTRIBUTION OF AGE FOR THE HIGHEST QUALITY WORK ARE SKEWD TOWARD THE OLDER AGE LEVEL, BOTH THE MEAN AND THE MEDIAN AGE ARE HIGHER THAN THE MODAL VALUES." (LEHMAN, 1953)

## 2. PELZ AND ANDREWS' FINDINGS:

GROWTH AND EXPANSION OF TECHNICAL KNOWLEDGE AND ITS APPLICATION IN THE LATE 1950'S AND EARLY 1960'S CREATED A CONCERN ABOUT THE RELATIONSHIP BETWEEN AGE AND PERFORMANCE AMONG ALL SCIENTIFICALLY AND TECHNICALLY TRAINED PERSONNEL, AND NOT JUST THE PRIZE-WINNING SEGMENT STUDIED BY LEHMAN. PELZ AND ANDREWS' STUDY OF A CROSS-SECTION OF SCIENTISTS AND ENGINEERS IN LARGE ORGANIZATIONS INDICATED THAT THE RELATIONSHIP BETWEEN AGE AND PERFORMANCE APPLIED GENERALLY TO ALL PEOPLE ENGAGED IN RESEARCH AND DEVELOPMENT AND NOT JUST TO THE PRIZE-WINNING FEW.

## 3. BALTES AND SCHAIE FINDINGS:

IN A STUDY TO DISPEL THE MYTH OF INTELLECTUAL DECLINE WITH AGE, BALTES AND SCHAIE CONDUCTED A LONGITUDINAL EVALUATION OF INTELLIGENCE IN THE EARLY 1960'S. THEY CONCLUDED THAT:

"OUR STATISTICAL ANALYSIS REVEALED THAT DIFFERENCES BETWEEN SCORES WERE DUE MAINLY TO GENERATIONAL DIFFERENCES



NOT TO CHRONOLOGICAL AGE. IN OTHER WORDS, THE IMPORTANT FACTOR WAS THE YEAR A SUBJECT WAS BORN, RATHER THAN HIS AGE AT THE TIME OF TESTING." (BALTES AND SCHAIE, 1974)

THEY FOUND THAT ON AT LEAST SOME DIMENSIONS OF INTELLIGENCE, PEOPLE OF AVERAGE HEALTH MAINTAINED OR EVEN INCREASED THEIR LEVEL OF PERFORMANCE ON INTELLIGENCE TESTS INTO LATER YEARS.

#### 4. THOMPSON AND DALTON FINDINGS:

IN A STUDY OF DESIGN ENGINEERS IN 1971 CONCERNING THE INCREASED INTEREST IN THE RELATIONSHIP BETWEEN AGE AND PERFORMANCE IN TECHNOLOGICAL-BASED ORGANIZATIONS, THOMPSON AND DALTON CONCLUDED THAT:

"NOT ONLY DOES IT APPEAR THAT AN ENGINEER'S PERFORMANCE PEAKS IN HIS MIDDLE TO LATE THIRTIES, BUT ALSO THERE SEEMS TO BE A TREND TOWARD YOUNGER AND YOUNGER OBSOLESCENCE." (THOMPSON AND DALTON, 1971)

AN INDEX USED BY THOMPSON AND DALTON WAS JOB ASSIGNMENT. THEY CONCLUDED THAT A CLEAR EVALUATION OF A MAN'S ABILITY WAS THE TYPE OF WORK HE WAS ASSIGNED SINCE A MANAGER IS MORE LIKELY TO PLACE HIS BEST MEN IN JOBS REQUIRING THE GREATEST KNOWLEDGE, SKILL, AND JUDGMENT.

RATINGS OBTAINED ON A MEASURE OF JOB COMPLEXITY INDICATED THAT IN THE VIEW OF THE ENGINEERS AND SCIENTISTS, PERFORMANCE PEAKED AT AN EARLY AGE AND CONTINUED TO DECLINE THEREAFTER. (THOMPSON AND DALTON, 1971)

IN COMPARING AGE AND PERFORMANCE RATINGS OF MANAGERS AND ENGINEERS AS A CHECK, THOMPSON AND DALTON FOUND THAT MANAGERS AND ENGINEERS AGREE THAT AN ENGINEER'S PERFORMANCE DROPS OFF AFTER HE LEAVES HIS THIRTIES. (THOMPSON AND DALTON, 1971)

THOMPSON AND DALTON'S PRIMARY FINDINGS SEEM TO



## INDICATE

"THAT THE YEARS OF HIGH PERFORMANCE SEEMS TO BE STARTING AND ENDING SOONER THEN THEY WERE EVEN A FEW YEARS AGO AND THAT THIS SHIFT IS OCCURRING WHEN LARGE NUMBERS OF TECHNICAL PERSONNEL ARE ENTERING THEIR FORTIES AND FIFTIES." (THOMPSON AND DALTON, 1971)

IN A CONTINUING STUDY OF TECHNICAL OBSOLESCENCE AMONG ENGINEERS IN 1974, THOMPSON AND DALTON FOUND THAT AVERAGE PERFORMANCE RATINGS WERE RELATED TO AGE AND THAT JOB ASSIGNMENT WAS AN IMPORTANT INDICATOR OR EVEN PREDICTOR OF PERFORMANCE RATINGS. THEIR FINDINGS IN THIS STUDY INDICATED THAT THE MOST COMPLEX JOBS WERE ASSIGNED TO INDIVIDUALS IN THEIR LATE TWENTIES WHILE ROUTINE JOBS IN THE LOWER HALF OF JOBS RELATED ON A COMPLEXITY SCALE WERE ASSIGNED TO PERSONNEL OVER 40. (THOMPSON AND DALTON, 1974)

IN AVOIDING AGE-RELATED STEREOTYPES, THOMPSON AND DALTON INDICATED THAT THE DIFFERENCES IN PERFORMANCE ARE GREATER WITHIN AGE GROUPS THAN BETWEEN THEM. INTERESTING AND CHALLENGING JOB ASSIGNMENTS WAS THE FACTOR WHICH MOST EFFECTIVELY DISTINGUISHED HIGH- AND LOW-PERFORMING ENGINEERS OF ALL AGES. (THOMPSON AND DALTON, 1974)

## D. NAVAL COMMUNICATION TECHNICAL PERSONNEL.

NAVAL COMMUNICATIONS HAS MADE QUANTUM ADVANCEMENTS IN THE LAST DECADE IN TERMS OF IMPROVED TECHNOLOGY OF TRANSMISSION MEDIA AND AUTOMATION. ATTENDANT WITH IMPROVED PROCEDURES, EQUIPMENT, AND AUTOMATION HAS BEEN THE GROWTH IN THE TECHNICAL EXPERTISE OF NAVAL COMMUNICATORS. A NAVAL COMMUNICATOR FOR PURPOSES OF THIS STUDY IS AN INDIVIDUAL DIRECTLY INVOLVED WITH THE MANAGEMENT, PLANNING, MAINTENANCE, AND OPERATION OF THE NAVAL TELECOMMUNICATIONS SYSTEM. USING THE CURRENT RATING STRUCTURE HE OR SHE MAY BE A RADIOMAN (RM), ELECTRONICS TECHNICIAN (ET), COMMUNICATIONS TECHNICIAN (CT), OR A DATA PROCESSING TECHNICIAN (DP).





OFFICERS WERE NOT INCLUDED IN THE STUDY FOR THREE REASONS. FIRST, THEIR TOURS OF DUTY IN THE COMMUNICATIONS FIELD ARE GENERALLY OF A SHORT DURATION, TWO OR THREE YEARS; AND SECOND, TOURS ARE NOT CONSISTENTLY IN COMMUNICATIONS RELATED ACTIVITIES. FOR EXAMPLE, AN OFFICER MAY BE ASSIGNED AS A COMMUNICATIONS OFFICER FOR TWO YEARS THEN SERVE AS A WEAPONS OR ENGINEERING OFFICER IN HIS NEXT TOUR OF DUTY; AND THIRD, A RECENT STUDY TO DETERMINE AND DESCRIBE THE JOBS PERFORMED BY OFFICERS SERVING IN NAVAL TELECOMMUNICATIONS MANAGEMENT BILLETS CONCLUDED THAT:

"CLUSTER ANALYSIS OF THE DATA REVEALED THAT BILLETS DIDN'T CLUSTER ALONG EXPECTED LINES, SUCH AS THE P-CODED/NON-P-CODED DISTINCTION, OR ALONG RANK GROUPINGS. IN FACT THE ONLY A PRIORI CLASSIFICATION THAT SEEMED TO BE REFLECTED IN THE RESULTS WAS THAT OF LINE FUNCTION VS STAFF FUNCTION." (MATTOX, 1973)

AN EXAMINATION OF CURRENT CLASS A SCHOOL CURRICULA AND ADVANCEMENT INSTRUCTION GUIDES, SUCH AS RM 1 AND C, DEMONSTRATES THE INCREASED EMPHASIS ON THE TECHNICAL ASPECTS OF THESE RATES.

ALTHOUGH EDUCATIONAL LEVEL FOR ENTRY INTO THE PROFESSION OF NAVAL COMMUNICATIONS IS NOT AS FORMALIZED AND HIGH AS COMPARED WITH ENGINEERS AND SCIENTIFIC RESEARCHERS STUDIED IN THE CIVILIAN ENVIRONMENT, TECHNICAL EXPERTISE IS REQUIRED FOR CONTINUED ADVANCEMENT IN RATE AND SURVIVAL OF THE TELECOMMUNICATIONS SYSTEM UPON WHICH OUR COMMAND AND CONTROL SYSTEM IS BASED.

TO SENSE THE TECHNICAL ADVANCES MADE IN THE LAST DECADE OF NAVAL COMMUNICATIONS, THE READER HAS MERELY TO EXAMINE THE METHODS OF TRANSMISSION EMPLOYED. NAVAL COMMUNICATIONS HAS PROGRESSED IN THE LAST TEN YEARS FROM SINGLE SIDEBAND, RADIO-FREQUENCY-SHIFT KEYING TRANSMISSION OF MESSAGES TO MULTIPLEXED TRANSMISSION USING THE FULL BANDWIDTH OF THE RADIO FREQUENCY SPECTRUM TO ULTRAHIGH RADIO FREQUENCY SATELLITE MEDIA. THE ATTENDANT COMPLEXITY OF EQUIPMENT AND PROCEDURES CAN PROBABLY BE GUESSED BY THE MOST



CASUAL READER.

THE NAVAL TELECOMMUNICATIONS SYSTEM OF THE REMAINDER OF THE 1970'S AND EARLY 1980'S WILL BE NO LESS TECHNOLOGICALLY ORIENTED. AS REAR ADMIRAL JON L. BOYES, A RECENT COMMANDER OF THE NAVAL TELECOMMUNICATIONS COMMAND, HAS POINTED OUT:

"... THE MAIN THRUST FOR THE 1970'S IS THE TRANSITION FROM ALMOST TOTAL DEPENDENCE ON HIGH FREQUENCY (HF) RADIO TO SATELLITE RELAY AS THE PRIMARY MEANS OF LONG-RANGE TRANSMISSION." (BOYES, 1975)

AUTOMATION OF MESSAGE PROCESSING HAS ALSO EMERGED SINCE 1965 AS BOTH A REALITY AND A GOAL FOR THE NAVAL COMMUNICATOR. ADMIRAL BOYES ALSO POINTED OUT THAT:

"FOUR PROGRAMS WILL STANDARIZE AUTOMATED PROCESSING WITHIN THE NAVY: THE NAVAL COMMUNICATIONS PROCESSING AND ROUTING SYSTEM, THE LOCAL DIGITAL MESSAGE EXCHANGE, THE REMOTE INFORMATION EXCHANGE TERMINAL, AND THE NAVAL MODULAR AUTOMATED COMMUNICATION SYSTEM." (BOYES, 1975)

EACH OF THESE PROGRAMS IS COMPRISED OF HARDWARE AND SOFTWARE DEVELOPED SPECIFICALLY FOR NAVAL USE BY COMPUTER MANUFACTURERS AND THE NAVY'S OWN ELECTRONICS COMMANDS. THESE SYSTEMS ARE ALL HIGHLY COMPLEX IN TERMS OF EQUIPMENT SOPHISTICATION AND OPERATIONAL PROCEDURES.

GIVEN THE COMPLEXITY OF NAVAL TELECOMMUNICATIONS, IT IS ASSUMED THAT THE LEVEL OF COMPETENCE REQUIRED OF THE NAVAL COMMUNICATOR IS EQUIVALENT TO THAT OF HIS CIVILIAN COUNTERPART IN TECHNOLOGICALLY BASED INDUSTRIES.

THE DESIGN OF THIS STUDY, THE INFORMATION COLLECTED, AND THE ANALYSIS OF THE VARIABLES IS DISCUSSED IN THE NEXT SECTION.



### III. DESIGN OF THE STUDY

#### A. LONGITUDINAL STUDY.

IDEALLY A STUDY OF THE RELATIONSHIP BETWEEN AGE AND PERFORMANCE AMONG COMMUNICATIONS PERSONNEL WOULD BE CONDUCTED USING SOME FORM OF LONGITUDINAL DATA. THIS WOULD INVOLVE COLLECTING PERFORMANCE APPRAISAL INFORMATION ON A SAMPLE OF INDIVIDUALS OVER A LONG PERIOD OF TIME. IDEALLY, THIS INFORMATION WOULD ALSO BE OBTAINED FROM THE SAME ENVIRONMENT SO THAT IT CAN BE READILY AND VALIDLY ANALYZED. UNFORTUNATELY, THE LEVEL THIS NAVAL POSTGRADUATE STUDENT ENJOYS IN THE NAVAL HIERARCHY PRECLUDED SUCH A STUDY. TWO OTHER LIMITATIONS ALSO PRECLUDE THE USE OF THIS METHOD OF RESEARCH. FIRST, ACCESS TO SUPERVISORY PERSONNEL IS HAMPERED BY ROTATIONAL POLICIES AND ASSIGNMENT OR RETIREMENT SITUATIONS OVER A 10 TO 20 YEAR TIME FRAME. SECOND, ACCESS TO PERSONNEL RECORDS AND PERFORMANCE APPRAISAL INFORMATION HAS TRADITIONALLY BEEN REGARDED IN THE NAVY AS SACRED. AT ONE TIME ONLY THE OFFICER SUBMITTING A REPORT OF PERFORMANCE, PROMOTION BOARDS, AND THE INDIVIDUAL CONCERNED, THEORETICALLY, HAD ACCESS TO PERFORMANCE EVALUATIONS. SO THERE IS CERTAINLY AN ETHICAL CONSIDERATION IN A RESEARCHER HAVING ACCESS TO A SERVICEMAN'S PERFORMANCE EVALUATIONS. AN ADDITIONAL CONSIDERATION IS THE FACT THAT ONLY NUMERICAL SUMMARIES OF RATINGS WOULD BE AVAILABLE FOR THE MORE SENIOR PERSONNEL SINCE WHEN A NAVY-MAN RE-ENLISTS FOR ADDITIONAL DUTY HIS RECORD IS CLEARED OF PERFORMANCE EVALUATIONS AND ONLY THE NUMERICAL SUMMARIES ARE INCLUDED. THEREFORE ONLY THE LATEST PERFORMANCE APPRAISALS WOULD BE AVAILABLE ALONG WITH NUMERICAL SUMMARIES OF PREVIOUS EVALUATIONS. ADDED TO THIS PROBLEM OF ACCESS TO PERFORMANCE APPRAISAL INFORMATION IS THE FACT THAT THE FORMAT AND STANDARDS OF EVALUATION HAVE CHANGED AT LEAST ONCE DURING THE LAST FIVE YEARS, AND IT



WOULD THEREFORE HAVE BEEN HARD TO COMPARE DATA FROM THE DIFFERENT FORMS.

IN ADDITION TO ALL OF THE FACTORS LISTED ABOVE, FIELD PERSONNEL CONTACTED DURING A PRELIMINARY TRIP TO A NAVAL COMMUNICATIONS STATION TO DEVELOP LIAISON FOR DATA COLLECTION PROVIDED CONSIDERABLE NEGATIVE FEEDBACK TO THE COLLECTION OF LONGITUDINAL DATA. GIVEN ALL OF THESE FACTORS MITIGATING AGAINST A LONGITUDINAL STUDY, THIS METHOD WAS REJECTED.

#### B. METHOD OF DATA COLLECTION.

THREE PRIMARY METHODS OF DATA COLLECTION WERE CONSIDERED: OBSERVATION, INTERVIEW, AND QUESTIONNAIRE.

THE OBSERVATION AND INTERVIEW METHODS WERE REJECTED BECAUSE THEY WOULD HAVE PRECLUDED ACCESS TO A LARGE DATA SAMPLE.

THE QUESTIONNAIRE METHOD WAS ADOPTED BECAUSE OF EASE OF ADMINISTRATION, AND THE OPPORTUNITY TO OBTAIN A LARGE DATA SAMPLE.

THE DATA COLLECTION EFFORT WAS BROKEN DOWN INTO TWO PHASES. PHASE ONE WAS THE COMPLETION OF THE LONGITUDINAL ANALYSIS QUESTIONNAIRE (APPENDIX A). IT WAS REASONED THAT THIS INFORMATION WOULD PROVIDE DATA ON JOB ASSIGNMENTS, PROMOTION HISTORY, AND EDUCATION. THESE DATA PROVIDED A BASIS FOR DISTINGUISHING HIGH PERFORMANCE CHARACTERISTICS AND DEVELOPING THE CAREER STAGES OF A COMMUNICATIONS CAREER. THIS QUESTIONNAIRE WAS COMPLETED BY THE INDIVIDUALS PARTICIPATING IN THE STUDY.

PHASE TWO OF THE DATA COLLECTION EFFORT WAS THE COMPLETION OF THE EVALUATION QUESTIONNAIRE (APPENDIX B). THIS QUESTIONNAIRE WAS ADOPTED FROM THOMPSON AND DALTON'S UNPUBLISHED WORK IN LONGITUDINAL ANALYSIS OF AGE AND PERFORMANCE AMONG ENGINEERS AND RESEARCHERS IN LARGE RESEARCH AND DESIGN ORGANIZATIONS. THE QUESTIONNAIRE WAS COMPLETED BY THE IMMEDIATE SUPERVISOR OF THE INDIVIDUALS WHO







SUBMITTED THE LONGITUDINAL ANALYSIS QUESTIONNAIRE. IN ADDITION, THE LEVEL OF SUPERVISOR WAS LIMITED TO THE PAY-GRADE E6 OR ABOVE SINCE IT WAS CONSIDERED THAT PAY-GRADES BELOW THE E6 LEVEL WOULD NOT POSSESS THE REQUISITE EXPERIENCE IN PERSONNEL APPRAISAL TO ADEQUATELY COMPLETE THE QUESTIONNAIRE.

### C. VARIABLES SELECTED FOR ANALYSIS.

THE VARIABLE SELECTED FOR ANALYSIS INCLUDED: AGE, RATE OR PAY GRADE, MEAN TIME BETWEEN PROMOTIONS, EDUCATION LEVEL, JOB ASSIGNMENT INDEX, YEARS SINCE LAST ADVANCEMENT IN RATE, AND SCORE ON AN EVALUATION QUESTIONNAIRE (APPENDIX B).

1. AGE. AGE, AS RECORDED IN YEARS AND REPORTED BY THE PARTICIPANTS ON THE LONGITUDINAL ANALYSIS QUESTIONNAIRE (APPENDIX A), WAS ANALYSED WITH THE BELOW LISTED VARIABLES.

2. RATE OR PAY GRADE. RATE, AS REPORTED BY RESPONDENTS, WAS RECORDED USING THE NUMERICAL EQUIVALENCY OF THE PAY GRADE. FOR EXAMPLE, A CHIEF RADIOMAN (RMC) WAS RECORDED AS AN E-7.

3. MEAN TIME BETWEEN ADVANCEMENTS. MEAN TIME BETWEEN ADVANCEMENTS WAS COMPUTED FROM INFORMATION PROVIDED BY THE RESPONDENTS. IT WAS CALCULATED BY DIVIDING THE SUM OF YEARS BETWEEN ADVANCEMENTS BY THE NUMBER OF ADVANCEMENTS. IT WAS REASONED THAT, REGARDLESS OF SERVICE ENVIRONMENT HIGH PERFORMERS WOULD HAVE A LOWER MEAN TIME BETWEEN ADVANCEMENTS THAN MIDDLE- OR LOW- PERFORMERS. THE CURRENT ADVANCEMENT STANDARDS WERE USED TO PROVIDE NORMATIVE DATA AGAINST WHICH INDIVIDUALS' ADVANCEMENT RECORDS COULD BE COMPARED. THIS STANDARD IS PROVIDED BELOW:

<u>FROM</u>	<u>TO</u>	<u>TIME IN SERVICE</u>	<u>TIME IN GRADE</u>
E1	E2	4 months	--
E2	E3	1 year	--
E3	E4	1.5 years	--
E4	E5	3 years	1 year
E5	E6	6 years	2 years
E6	E7	8 years	3 years
E7	E8	12 years	3 years
E8	E9	14 years	2 years



USING THESE DATA, FOR THE SPECIAL CASE OF A SENIOR CHIEF RADIOMAN ( PAYGRADE E-8) BEING ADVANCED IN RATE IN THE MINIMUM TIME A MEAN TIME BETWEEN ADVANCEMENTS OF 1.7 YEARS WOULD BE CALCULATED.

4. EDUCATION LEVEL. EDUCATION LEVEL WAS BASED ON YEARS OF FORMAL EDUCATION ATTEMPTED OR DEGREES OBTAINED. FOR EXAMPLE, A HIGH SCHOOL GRADUATE WHO HAD ATTENDED COLLEGE FOR TWO YEARS WAS CREDITED WITH 14 YEARS OF FORMAL EDUCATION EVEN THOUGH NO FORMAL COLLEGE DEGREE WAS AWARDED. IT WAS REASONED THAT HIGH PERFORMING PERSONNEL WOULD BE ENERGETIC IN ATTEMPTING HIGHER EDUCATION FOR THEIR OWN BENEFIT AS WELL AS FOR INCREASING THEIR OPPORTUNITIES FOR ADVANCEMENT WITHIN THE NAVAL SERVICE.

5. JOB ASSIGNMENT. USING THE SAME REASONING THAT THOMPSON AND DALTON USED IN ASSESSING THE STANDINGS OF ENGINEERS, IT WAS CONSIDERED THAT ASSIGNMENT TO A RESPONSIBLE , DEMANDING, AND CHALLENGING TASK WAS AN INDICATION OF HIGH PERFORMANCE SINCE THE MANAGER, IN THIS CASE THE DEPARTMENT HEAD OR DIVISION OFFICER, WOULD PLACE HIS BEST PERSONNEL IN THE MOST CRITICAL ASSIGNMENTS TO THE SUCCESS OF THE ORGANIZATION. A LIST OF BILLETS CURRENTLY HELD BY RESPONDENTS TO APPENDIX A WAS SUBMITTED TO A GROUP OF NAVAL POSTGRADUATE SCHOOL STUDENTS IN THE INFORMATION SYSTEM (TELECOMMUNICATIONS) MANAGEMENT CURRICULUM FOR RATING ON A ONE TO FIVE SCALE. A SCORE OF ONE FOR AN ASSIGNMENT WAS CONSIDERED TO BE THE TASK LEAST SIGNIFICANT OR IMPORTANT TO THE OVERALL MISSION OF THE NAVAL TELECOMMUNICATIONS ORGANIZATION WHILE A SCORE OF FIVE INDICATED THE JOB WAS JUDGED TO BE CRITICALLY IMPORTANT TO MISSION EFFECTIVENESS. THE INDEX SCORES FOR CURRENT BILLETS WERE THEN PAIRED WITH OTHER INFORMATION PROVIDED BY THE RESPONDENTS TO THE LONGITUDINAL ANALYSIS QUESTIONNAIRE.



6. YEARS SINCE LAST ADVANCEMENT. INITIAL REVIEW OF RESPONSES TO THE LONGITUDINAL ANALYSIS QUESTIONNAIRE REVEALED THAT A NUMBER OF PERSONNEL HAD NOT BEEN ADVANCED IN THE LAST TEN YEARS. IT WAS REASONED THAT THIS MIGHT HAVE BEEN AN INDICATION OF THEIR PERFORMANCE AND THIS VARIABLE WAS ADDED TO THE ANALYSIS.

7. SCORE ON THE EVALUATION QUESTIONNAIRE. THE SCORES ON THE EVALUATION QUESTIONNAIRE WERE BASED ON THE IMMEDIATE SUPERVISOR'S APPRAISAL OF THE PARTICIPANTS AS THEY WERE CURRENTLY FUNCTIONING IN THEIR CURRENT ASSIGNMENTS. THE SUPERVISORS WERE IN PAY GRADE E-6 AND ABOVE, WHICH WOULD CORRESPOND TO A MINIMUM OF SIX YEARS OF NAVAL SERVICE AND AT LEAST THREE YEARS IN A MIDDLE MANAGEMENT POSITION WITHIN THE HIERARCHY OF THE ENLISTED STRUCTURE. AS DISCUSSED EARLIER, THE QUESTIONNAIRE WAS BASED ON AN UNPUBLISHED PAPER BY THOMPSON AND DALTON, AND PROVIDED THE CHARACTERISTICS OF HIGH PERFORMANCE USED BY THEM TO ASSESS PERFORMANCE AND CAREER STAGES IN ENGINEERING AND RESEARCH ORGANIZATIONS.

SCORES FROM THE THOMPSON AND DALTON FORM WERE DETERMINED USING TWO SEPARATE METHODS. FIRST, A CONTINUUM SCORE WAS COMPUTED. FOR EXAMPLE, AN INDIVIDUAL RATED ENTIRELY ON THE "DESCRIBES VERY WELL" END OF THE CONTINUUM ON EACH OF THE PERFORMANCE SCALES WOULD BE CREDITED WITH 330 POINTS WHILE THE INDIVIDUAL RATED ON THE "NOT AT ALL" END WOULD BE CREDITED WITH 33 POINTS. THE SECOND METHOD OF SCORING USED AN "ALL OR NOTHING" CRITERIA. AN INDIVIDUAL RECEIVED A SCORE OF ONE OR ZERO ON EACH QUESTION AND ALL APPRAISALS MARKED LESS THAN "DESCRIBES VERY WELL" WERE DISCARDED USING THIS METHOD. FOR EXAMPLE, AN INDIVIDUAL RATED ENTIRELY ON THE "DESCRIBES VERY WELL" END OF THE CONTINUUM ON EACH SCALE WOULD BE CREDITED WITH 33 POINTS.

#### D. ANALYSES CONDUCTED.

THE DATA WAS ANALYZED USING VERSION 3.0 OF THE



SNAP/IEDA STATISTICAL PROGRAM DEVELOPED AT PRINCETON UNIVERSITY. THIS PROGRAM WAS SELECTED BECAUSE OF THE VARIETY OF STATISTICAL APPLICATIONS AND THE GRAPHIC OUTPUT IT MADE AVAILABLE.

THE MEAN, STANDARD DEVIATION, MINIMUM AND MAXIMUM AND RANGE OF EACH VARIABLE WAS CALCULATED. IN ADDITION, HISTOGRAMS AND GRAPHS OF EACH VARIABLE WERE PRODUCED.

FINALLY, A CORRELATION MATRIX FOR THE VARIABLES WAS DEVELOPED AND A STEPTWISE LINEAR REGRESSION TO PREDICT SUCCESS AS A NAVAL COMMUNICATOR FROM VARIABLES SUCH AS AGE, MEAN TIME BETWEEN ADVANCEMENTS, EDUCATION, YEARS SINCE LAST ADVANCEMENT IN RATE, AND SCORE ON THE THOMPSON AND DALTON EVALUATION QUESTIONNAIRE WAS PERFORMED. AGE, IN ALL CASES, WAS THE DEPENDENT VARIABLE.

THE RESULTS OF THESE ANALYSES ARE PRESENTED IN THE NEXT SECTION.





#### IV. RESULTS OF ANALYSIS

##### A. PRESENTATION OF STATISTICAL RESULTS.

LONGITUDINAL ANALYSIS QUESTIONNAIRES (APPENDIX A) WERE SENT TO NAVAL COMMUNICATION STATIONS HONOLULU, ITALY, AND SAN FRANCISCO, AND USS RANGER (CVA 61). THESE STATIONS WERE SELECTED FOR EASE OF ADMINISTRATION OF THE QUESTIONNAIRES. PERSONAL COLLEAGUES OF THE WRITER WERE AVAILABLE AT EACH SITE TO MONITOR THE DATA COLLECTION EFFORT. THE LONGITUDINAL ANALYSIS QUESTIONNAIRES WERE ADMINISTERED ON A VOLUNTARY BASIS TO A RANDOM SAMPLE OF NAVAL TELECOMMUNICATIONS PERSONNEL AT THE ABOVE SITES AND THEN RETURNED TO THE WRITER FOR ANALYSIS. THE EVALUATION QUESTIONNAIRES (APPENDIX B) WERE THEN FORWARDED TO THE IMMEDIATE SUPERVISORS OF THE INDIVIDUALS PARTICIPATING IN THE DATA COLLECTION EFFORT. ALL QUESTIONNAIRES WERE FINALLY RETURNED FOR COLLATION AND ANALYSIS OF THE VARIABLES DISCUSSED IN THE PREVIOUS SECTION.

A TOTAL OF 182 OBSERVATIONS WERE UTILIZED IN THE FINAL ANALYSIS WITH RESPONSES FROM NAVAL COMMUNICATION STATION HONOLULU (35), NAVAL COMMUNICATION STATION SAN FRANCISCO (85), AND USS RANGER (CVA 61) (62). TWENTY-FOUR RESPONSES FROM NAVAL COMMUNICATION STATION ITALY WERE NOT INCLUDED IN THE FINAL ANALYSIS DUE TO THE NON-RECEIPT OF THE EVALUATION QUESTIONNAIRES.

THE HAZARDS OF USING THE QUESTIONNAIRE METHOD OF DATA COLLECTION AND THE POSTAL SERVICE WERE RECOGNIZED IN THE EARLY STAGES OF THE RESEARCH EFFORT. UNFORTUNATELY, A COMPLETE POSTING OF LONGITUDINAL ANALYSIS QUESTIONNAIRES FROM NAVAL COMMUNICATION STATION ITALY DID NOT REACH THE WRITER, AND THE EVALUATION QUESTIONNAIRES FOR THE TWENTY-FOUR THAT WERE RECEIVED WERE LOST IN THE MAILS ALSO.

DEMOGRAPHIC DATA FOR THE 182 OBSERVATIONS OF THE STUDY



ARE PRESENTED IN TABLE I.

THE ANALYSIS OF THE LONGITUDINAL DATA SUBMITTED BY THE TELECOMMUNICATIONS PERSONNEL PARTICIPATING IN THE STUDY VERIFIED THE CAREER DEVELOPMENT LEVELS AND HIGH PERFORMANCE CHARACTERISTICS DEVELOPED BY THOMPSON AND DALTON FROM THEIR RESEARCH WITH ENGINEERS, BANKERS, ACCOUNTANTS, AND UNIVERSITY FACULTY. THESE CAREER DEVELOPMENT LEVELS AND HIGH PERFORMANCE CHARACTERISTICS ARE PRESENTED IN FIGURES 1 AND 2 RESPECTIVELY.



TABLE I  
DEMOGRAPHIC DATA FOR 182 OBSERVATIONS  
OF NAVAL TELECOMMUNICATIONS PERSONNEL

MALES: 166  
FEMALES: 16  
HIGH SCHOOL GRADUATES: 181  
COLLEGE ATTEMPTED/COMPLETED: 52  
CLASS A SCHOOL GRADUATES: 164  
CLASS B SCHOOL GRADUATES: 67  
CLASS C SCHOOL GRADUATES: 74  
COMMSYSTech SCHOOL: 16  
PAYGRADES: E1-1, E2-10, E3-20, E4-27, E5-47, E6-42,  
E7-24, E8-4, E9-1, W2-2



FIGURE 1  
CAREER DEVELOPMENT LEVELS\*

LEVEL 1:

WORKS UNDER THE SUPERVISION OF A MORE SENIOR COMMUNICATION RATING.

DEVELOPMENT COMES BY HELPING MORE SENIOR COMMUNICATION PERSONNEL WITH DETAILED WORK.

DOES NOT DEMONSTRATE OWN INITIATIVE

LACKS SKILLS AND STATUS, FREQUENTLY ASSIGNED MENIAL TASKS

BEGINS TO DEVELOP AN AREA OF EXPERTISE WITH EQUIPMENT, PROCEDURES, OR MAINTENANCE.

LEVEL 2:

BECOMES SPECIALIZED IN A PARTICULAR AREA OF PROCEDURES, EQUIPMENT, OR MAINTENANCE.

DEVELOPS CREDIBILITY AND A REPUTATION FOR COMPETENCE IN A SPECIALIZED AREA.

INCREASES IN CONFIDENCE AND ABILITY.

WORKS INDEPENDENTLY AND PRODUCES RESULTS, SUCH AS ASSIGNMENT AS AN INDEPENDENT TECHNICIAN OR OPERATOR FOR A PARTICULAR TELECOMMUNICATION EQUIPMENT.

BEGINS LIMITED SUPERVISION OF OTHER MORE JUNIOR COMMUNICATIONS PERSONNEL.





FIGURE 1-CONTINUED  
CAREER DEVELOPMENT LEVELS\*

LEVEL\_3:

WORKS IN MORE THAN ONE AREA.

MAKES SIGNIFICANT CONTRIBUTIONS DUE TO KNOWLEDGE IN  
HIS SPECIALIZED AREA

REPRESENTS THE COMMAND THROUGH CONFERENCES,  
COMMITTEES, CONTACTS, AND CORRESPONDENCE

INVOLVED IN THE DEVELOPMENT OF OTHER COMMUNICATIONS  
PERSONNEL AS A COUNSELOR FOR JUNIOR PERSONNEL, DIVISION  
OFFICER, OR AN IDEA MAN FOR A SPECIAL STAFF GROUP

LEVEL\_4:

INVOLVED IN DEVELOPMENT OF FUTURE KEY PERSONNEL

INFLUENCES ORGANIZATION BECAUSE OF A HIGHLY DEVELOPED  
ABILITY TO ACCESS BOTH THE INTERNAL AND EXTERNAL ENVIRONMENT  
OF THE COMMAND

INFLUENCES FUTURE DIRECTION OF THE COMMAND BY:  
ORGANIZATIONAL LEADERSHIP AND POLICY, INTEGRATING THE WORK  
OF OTHERS, FORMULATION OF NEW AREAS OF DIRECTION, AND  
ORIGINAL IDEAS WHICH LEAD THE COMMAND INTO NEW WORK AREAS.

\* ADAPTED FROM DALTON AND THOMPSON, "A LONGITUDINAL ANALYSIS  
OF AGE AND PERFORMANCE AMONG ENGINEERS", AN UNPUBLISHED  
PAPER, 1974.



## FIGURE 2

### HIGH PERFORMANCE CHARACTERISTICS\*

#### MANAGEMENT SKILLS:

CAN ORGANIZE A PROJECT, KNOWS WHERE TO GO AND WHO TO SEE IN ORDER TO ACCOMPLISH A TASK

#### WORKING RELATIONSHIPS:

HAS GOOD INTERPERSONAL RELATIONSHIPS

HAS AN EFFICIENT RELATIONSHIP WITH HIS IMMEDIATE SUPERVISOR

#### OUTSIDE RELATIONSHIPS:

HAS GOOD WRITING SKILLS

HAS GOOD ORAL PRESENTATION SKILLS

HAS WELL DEVELOPED COMMAND RELATIONS

#### ADJUSTMENT:

LIKES VARIETY AND CHANGE

ADAPTS QUICKLY AND EASILY TO NEW ASSIGNMENTS, SITUATIONS, OR TASKS

#### INVOLVEMENT IN WORK:

DEEPLY INVOLVED IN WORK

GENERATES NEW IDEAS AND PROCEDURES

#### CAREER PLANNING:

THINKS ABOUT CAREER DEVELOPMENT

AMBITIOUS, TAKES ADVANTAGE OF OPPORTUNITIES

LEARNS AND IMPROVES ON HIS OWN

MAINTAINS CONTACT WITH TRENDS IN HIS FIELD

IS IMMOBILE WITH RESPECT TO THE NAVY AS A MACRO-ORGANIZATION BUT WILL MOVE WITHIN THE SYSTEM IN ORDER TO PURSUE HIS CAREER DEVELOPMENT

\* ADAPTED FROM DALTON AND THOMPSON, " A LONGITUDINAL ANALYSIS OF AGE AND PERFORMANCE AMONG ENGINEERS", AN UNPUBLISHED PAPER, 1974.



AFTER RECEIPT OF BOTH QUESTIONNAIRES FOR THE 182 OBSERVATIONS, THE DATA WAS CODED AND ANALYZED WITH THE SNAP/IEDA STATISTICAL PACKAGE USING THE IBM 360-67 SYSTEM AT THE NAVAL POSTGRADUATE SCHOOL, MONTEREY, CALIFORNIA. THE STATISTICAL PROPERTIES OF THE VARIABLES OF THE STUDY ARE PRESENTED IN TABLE II.

IN ORDER TO DETERMINE WHETHER THE VARIABLES WERE LINEARLY RELATED, A MATRIX OF CORRELATION COEFFICIENTS WAS DEVELOPED. THE MATRIX IS PRESENTED IN FIGURE 3. A STEPWISE LINEAR REGRESSION OF THE VARIABLES WAS PERFORMED WITH VARIABLE 1 (AGE) AS THE INDEPENDENT VARIABLE. THE RESULTS OF THESE REGRESSIONS ARE PRESENTED IN FIGURES 4 THORUGH 9. THE CORRELATION COEFFICIENT BETWEEN VARIABLE 1 AND 4 WAS TOO SMALL TO PERFORM A STEPWISE LINEAR REGRESSION USING THE SNAP/IEDA; THEREFORE, THIS PRESENTATION IS OMITTED.

FINALLY, CONTINUUM AND "ALL OR NOTHING" SCORES ON THE EVALUATION QUESTIONNAIRE WERE DIVIDED INTO FOUR AGE-GROUPS. THE MEAN AND STANDARD DEVIATION OF THE EVALUATION SCORES WERE COMPUTED FOR EACH AGE- GROUP. THE SIGNIFICANCE OF THE DIFFERENCE OF THE MEAN SCORES WAS TESTED USING A TWO-TAILED TEST AT THE 0.05 LEVEL OF SIGNIFICANCE. THE MEAN CONTINUUM SCORES FOR THE FOUR AGE-GROUPS ARE PRESENTED IN FIGURE 10. THE MEAN "ALL OR NOTHING" SCORES FOR THE GROUPS ARE PRESENTED IN FIGURE 11.



TABLE II  
STATISTICAL PROPERTIES OF THE EIGHT  
VARIABLES, 182 OBSERVATIONS

<u>VARIABLE</u>	<u>MEAN</u>	<u>STANDARD DEVIATION</u>	<u>MEDIAN</u>	<u>MINIMUM VALUE</u>	<u>MAXIMUM VALUE</u>	<u>RANGE</u>
1 (AGE)	26.9	6.335	25.0	18.0	42.0	24.0
2 (PAYGRADE)	5.05	1.648	5.0	1.0	11.0	10.0
3 (MEAN TIME BETWEEN ADVANCEMENTS)	1.74	0.866	1.5	0.5	5.0	4.5
4 (EDUCATION LEVEL)	12.4	0.061	12.0	9.0	17.0	8.0
5 (YEARS SINCE LAST ADVANCEMENT)	3.19	2.791	2.0	0.5	13.0	12.5
6 (JOB INDEX)	4.01	1.027	4.0	1.0	5.0	4.0
7 (CONTINUUM SCORE OF EVALUATION)	199.1	54.61	201.0	54.0	321.0	267.0
8 ( <u>"ALL OR NOTHING"</u> SCORE ON EVALUATION)	4.06	6.495	1.0	0.0	31.0	31.0



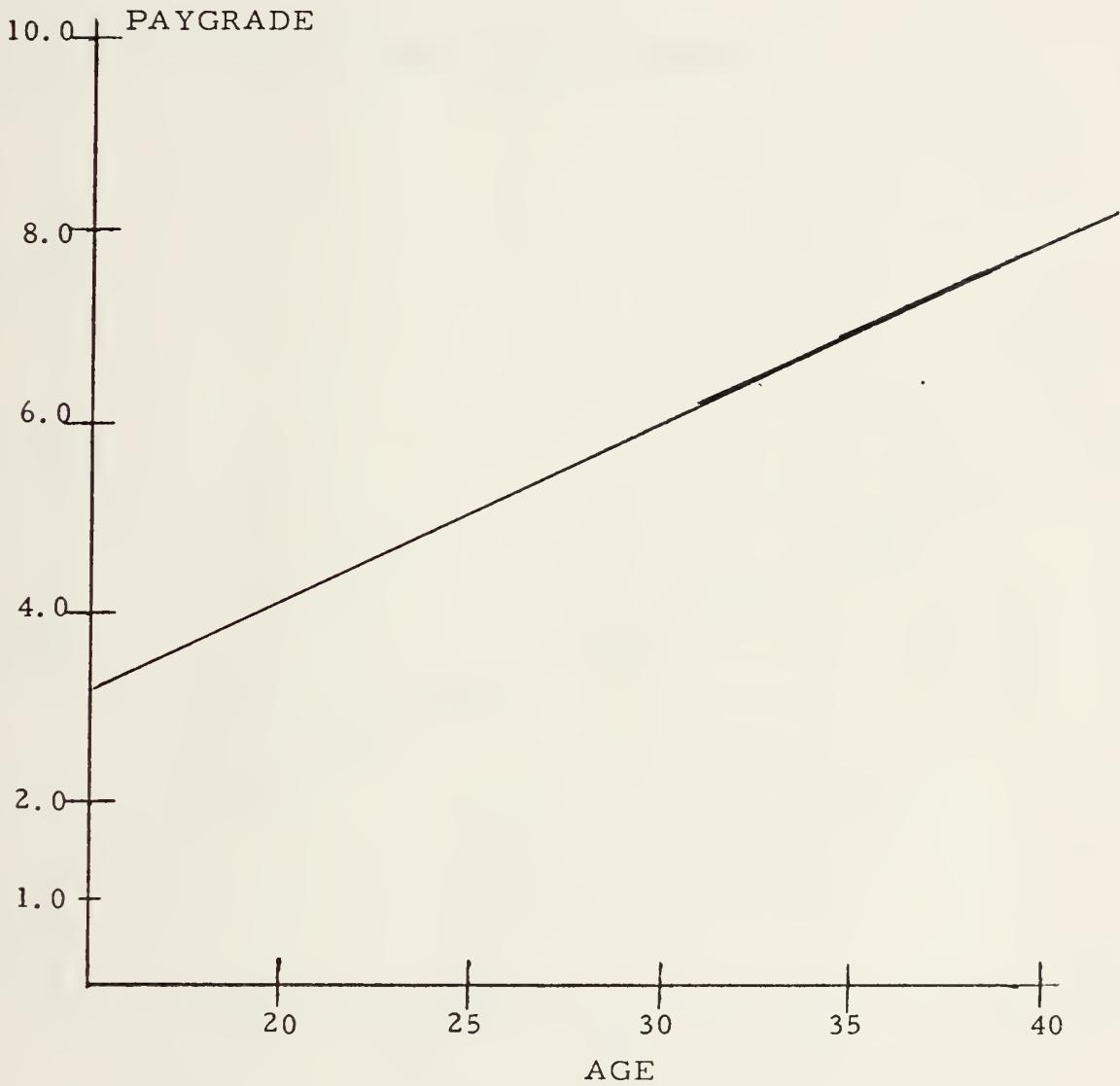


FIGURE 2  
MATRIX OF CORRELATION COEFFICIENTS FOR  
EIGHT VARIABLES, 182 OBSERVATIONS

VARIABLES	1	2	3	4	5	6	7	8
1	1.0	.81	.76	.03	.71	.39	.38	.27
2	.81	1.0	.68	.19	.48	.45	.50	.45
3	.76	.68	1.0	.02	.32	.23	.30	.27
4	.03	.19	.02	1.0	-.12	.05	.18	.15
5	.71	.48	.32	-.12	1.0	.31	.26	.13
6	.39	.45	.23	.05	.31	1.0	.22	.20
7	.38	.50	.30	.18	.26	.22	1.0	.60
8	.27	.45	.27	.15	.13	.20	.61	1.0

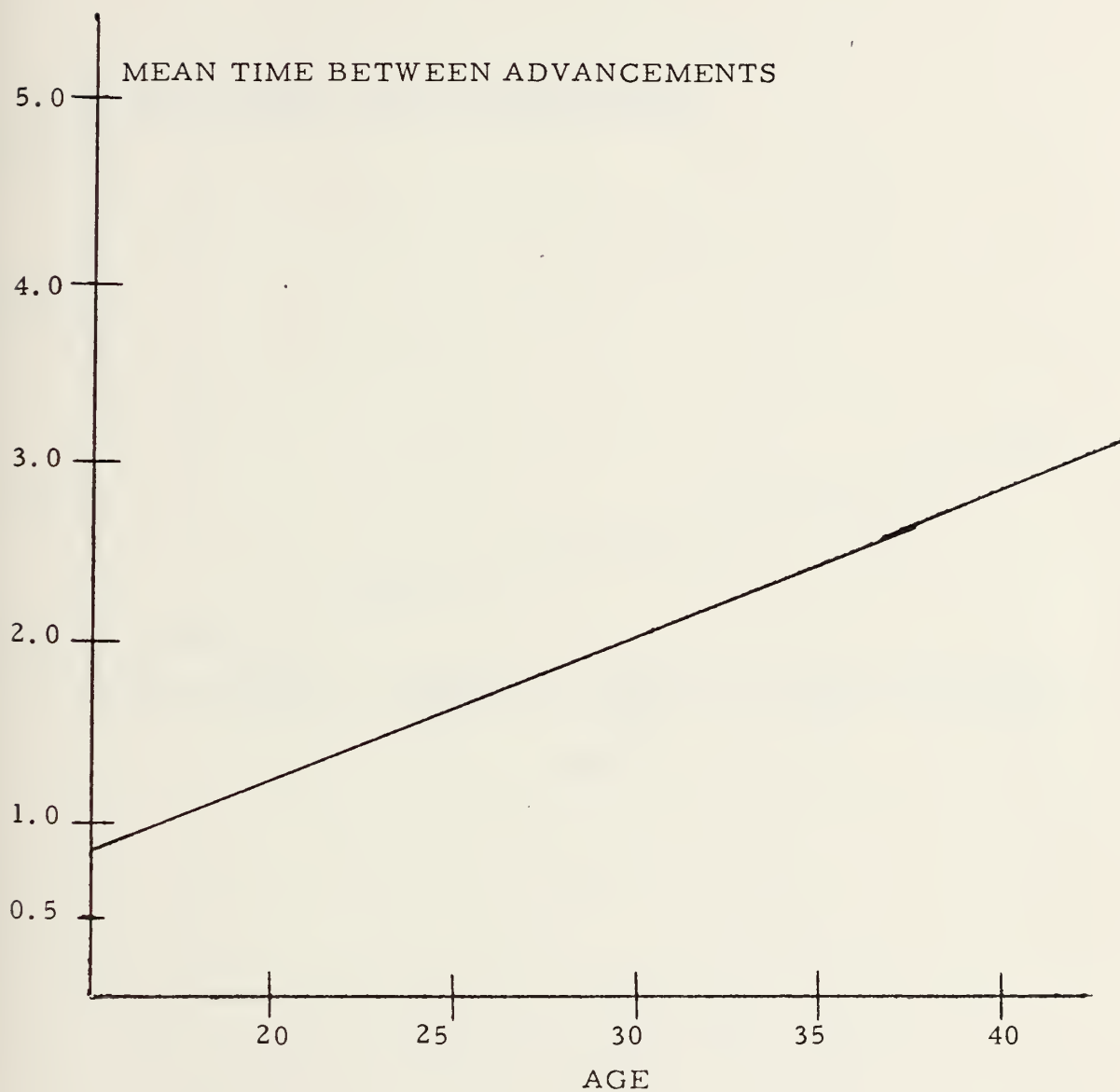


FIGURE 4  
STEPWISE LINEAR REGRESSION OF VARIABLES 1 AND 2  
(AGE AND PAYGRADE)





FIGURE\_5  
STEPWISE LINEAR REGRESSION OF VARIABLES 1 AND 3  
(AGE AND MEAN TIME BETWEEN ADVANCEMENTS)





FIGURE\_6  
STEPWISE LINEAR REGRESSION OF VARIABLES 1 AND 5  
(AGE AND YEARS SINCE LAST ADVANCEMENT)

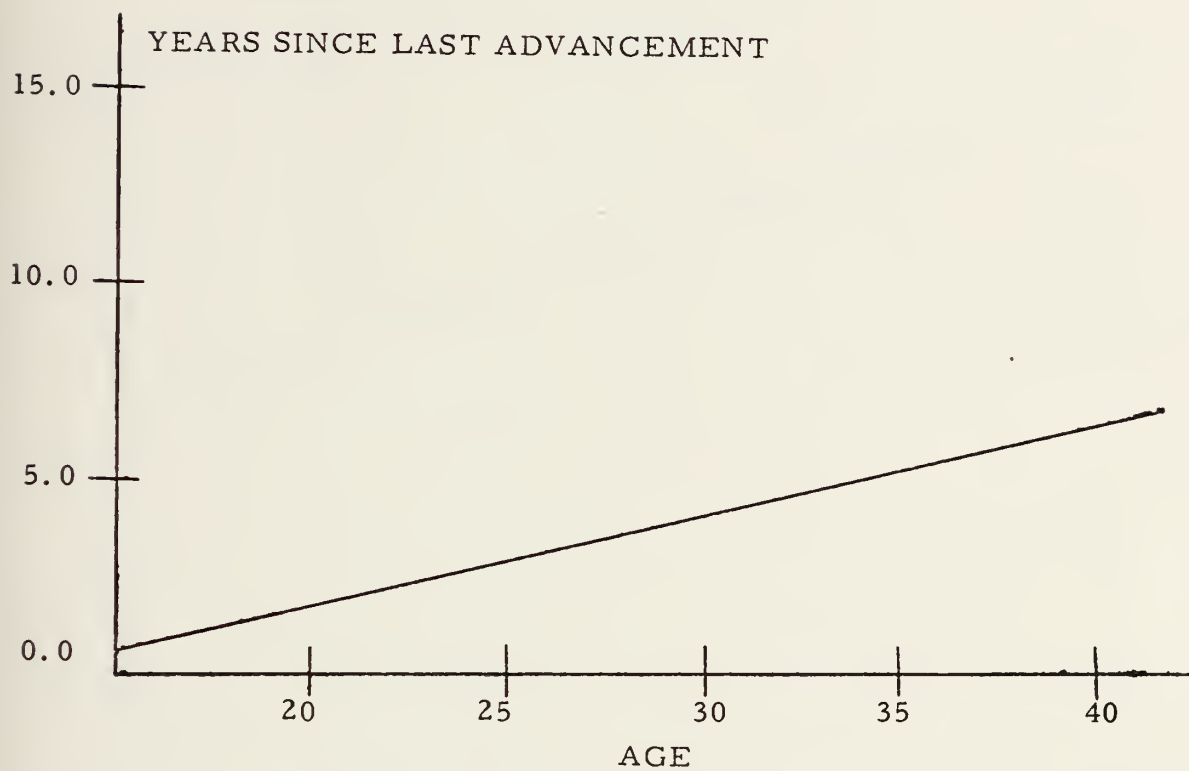
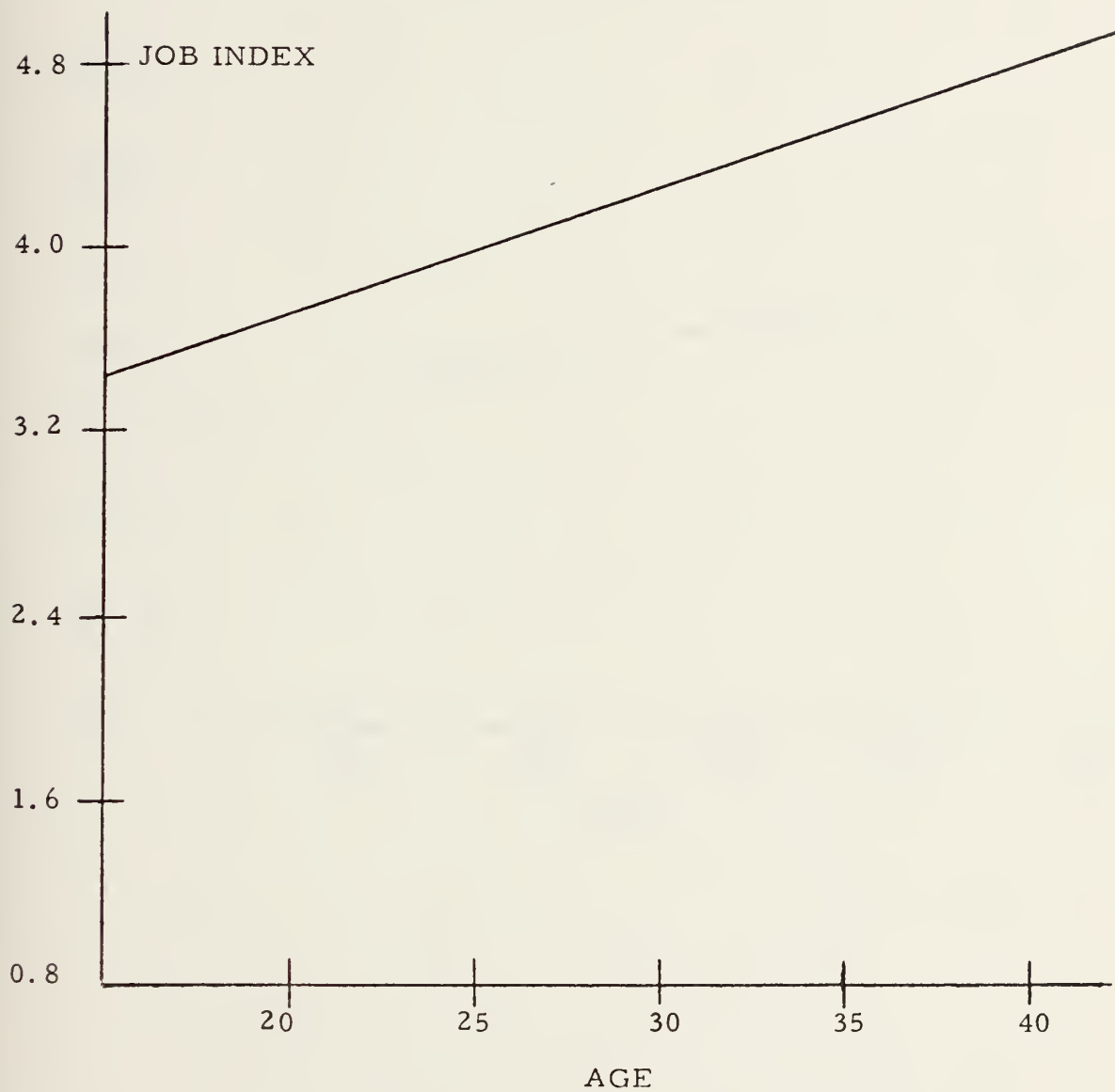






FIGURE 7  
STEPWISE LINEAR REGRESSION OF VARIABLES 1 AND 6  
(AGE AND JOB INDEX)





FIGURE\_8  
STEPWISE LINEAR REGRESSION OF VARIABLES 1 AND 7  
(AGE AND CONTINUUM SCORE ON EVALUATION)

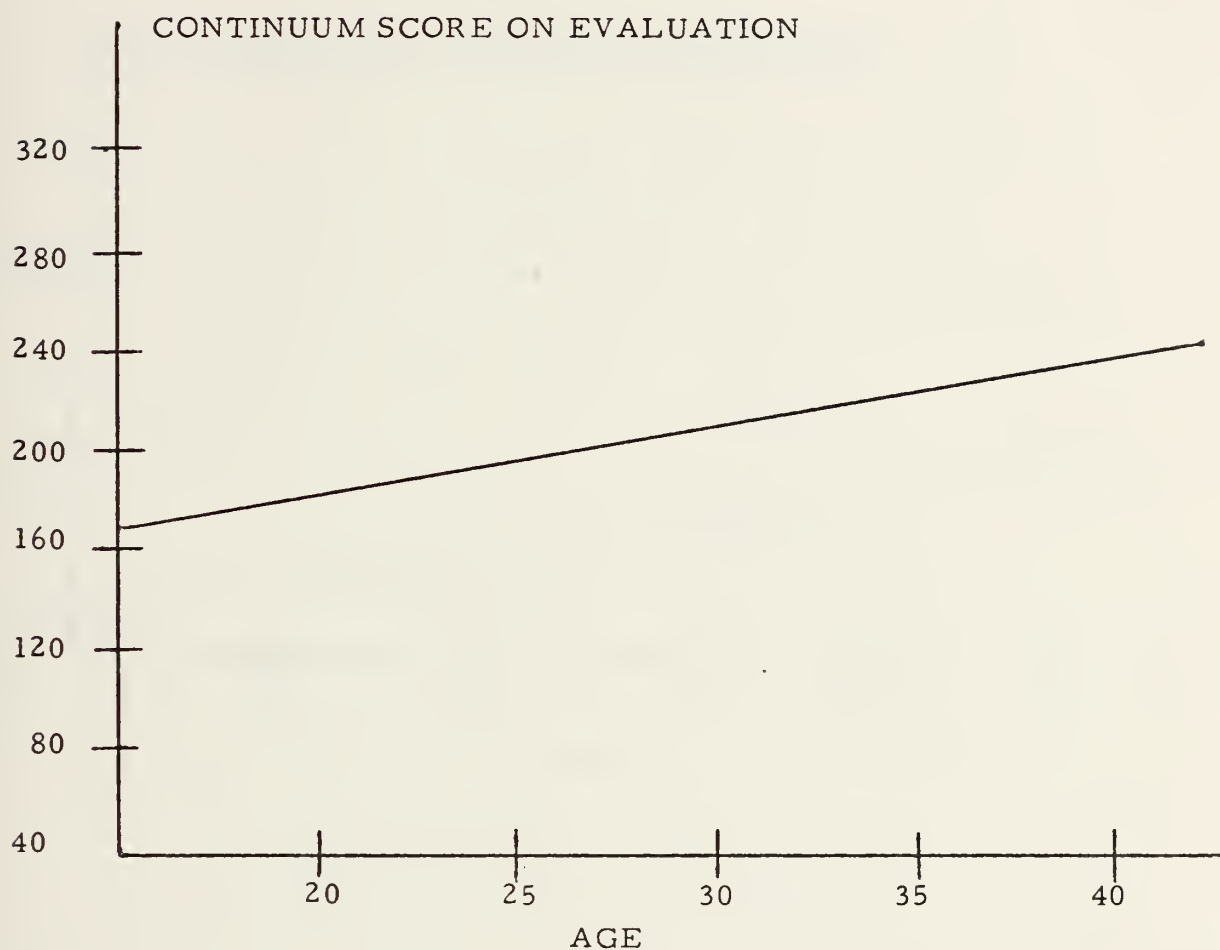




FIGURE 2  
STEPWISE LINEAR REGRESSION OF VARIABLES 1 AND 8  
(AGE AND "ALL OR NOTHING" SCORE ON EVALUATION)

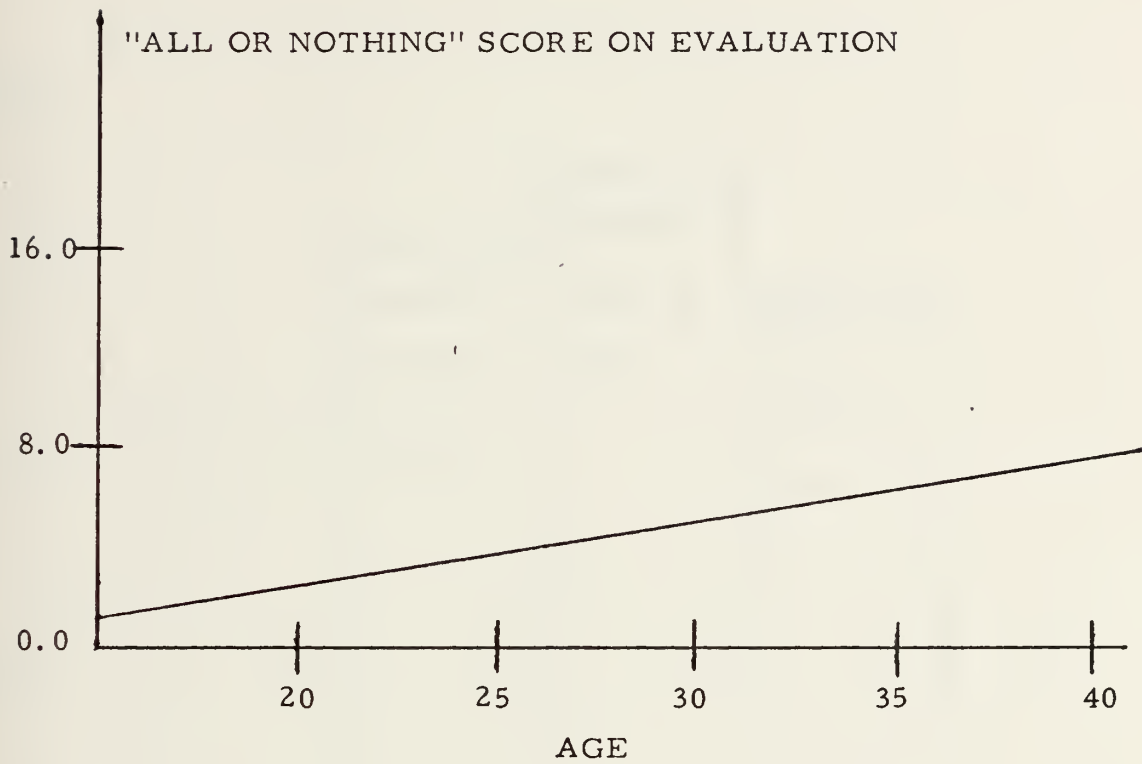




FIGURE 10  
MEAN CONTINUUM SCORES ON THE EVALUATION QUESTIONNAIRE

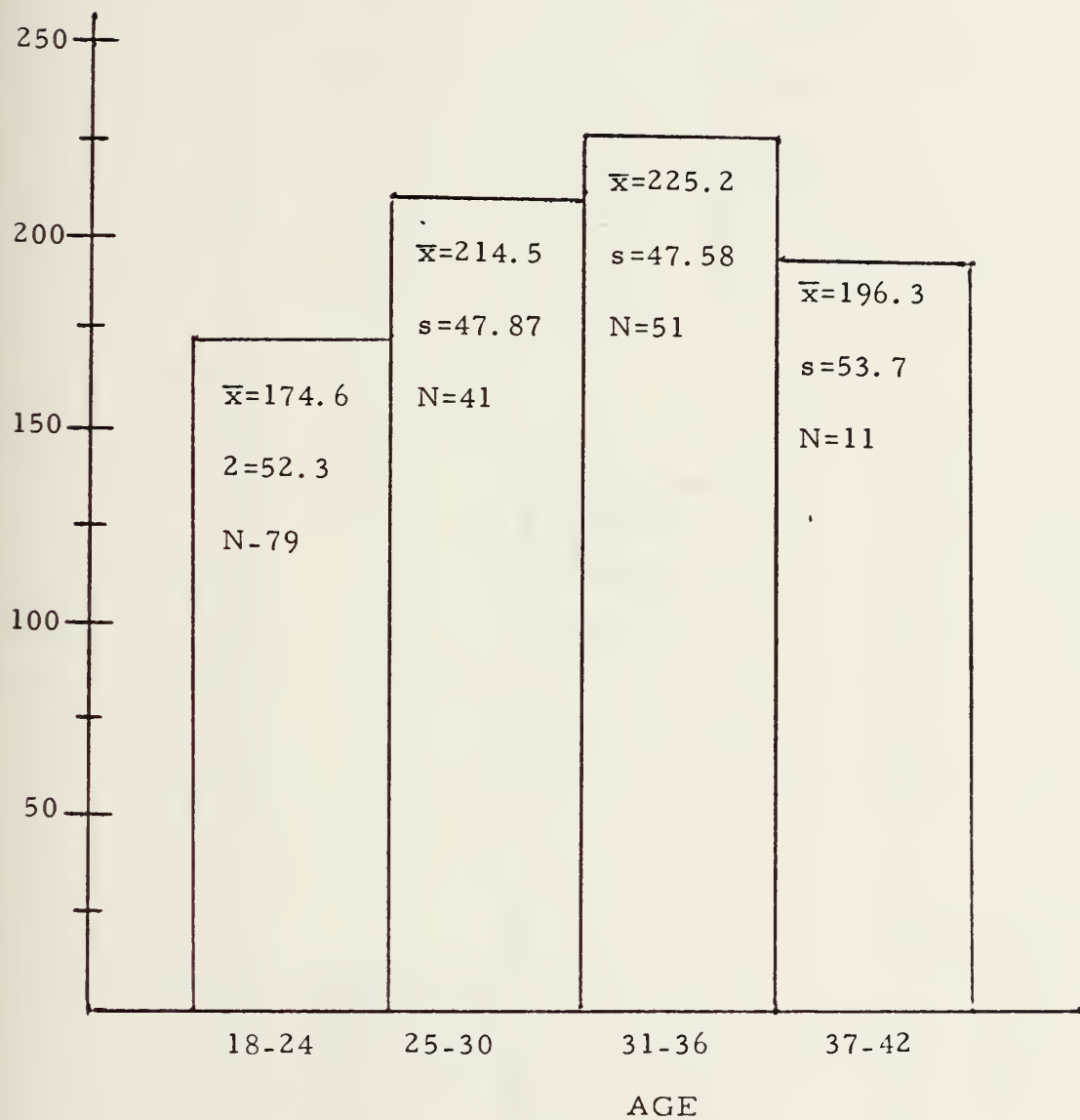
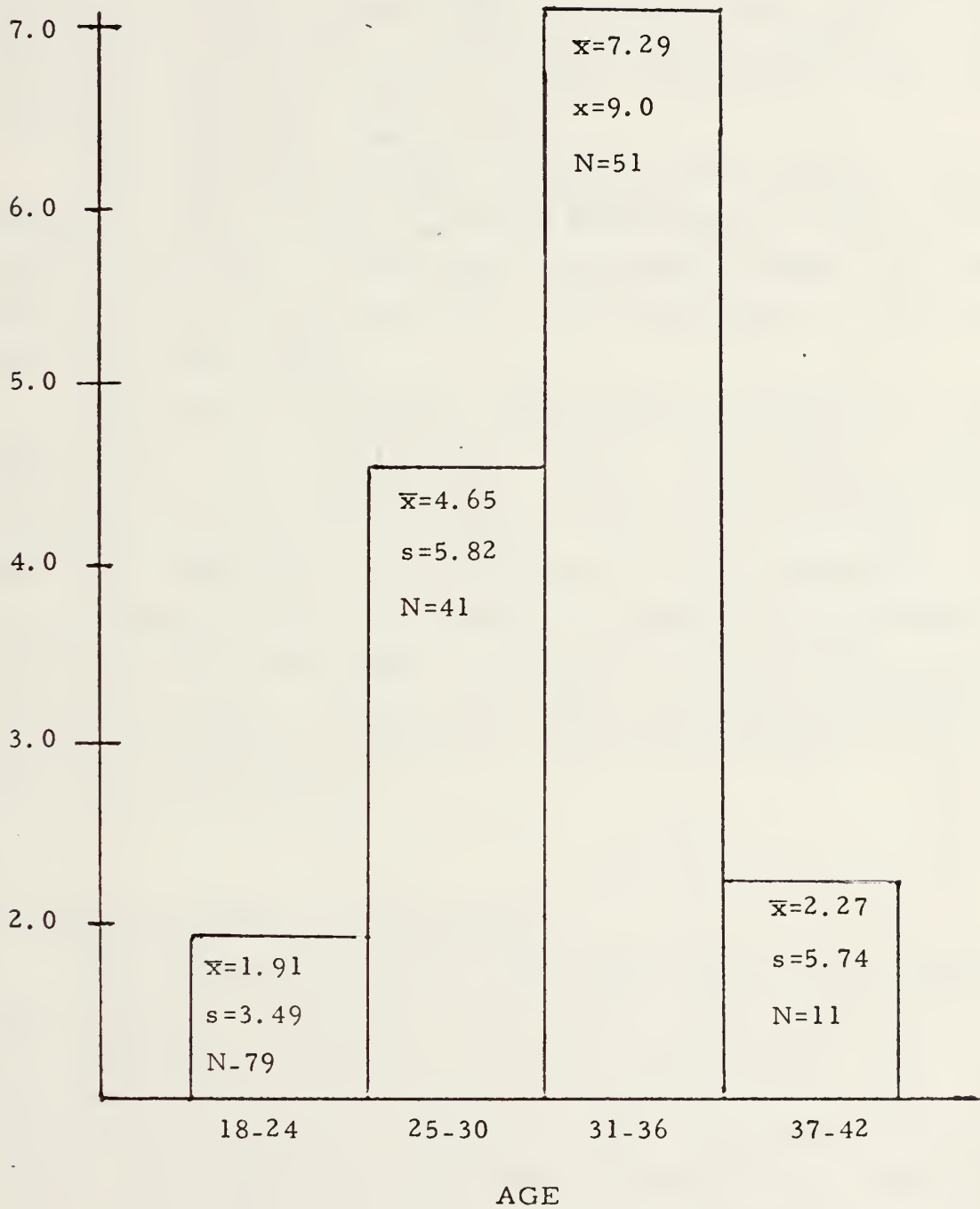






FIGURE 11

MEAN "ALL OR NOTHING" SCORES ON THE EVALUATION QUESTIONNAIRE





THERE WAS A SIGNIFICANT DIFFERENCE BETWEEN THE MEAN CONTINUUM SCORE OF THE 18-24 YEAR AGE-GROUP AND THE 25-30 YEAR AGE-GROUP. THE DIFFERENCE BETWEEN THE MEAN CONTINUUM SCORE OF THE 18-24 YEAR AGE-GROUP AND THE 37-42 YEAR AGE-GROUP WAS NOT SIGNIFICANT AT THE 0.05 SIGNIFICANCE LEVEL. THE DIFFERENCE OF MEAN CONTINUUM SCORES ON THE EVALUATION WAS NOT SIGNIFICANT FOR THE 25-30, 31-36, AND 37-42 YEAR AGE-GROUPS WHEN TESTED.

THE SAME RESULTS WERE OBTAINED WHEN THE MEAN "ALL OR NOTHING" SCORES ON THE EVALUATION QUESTIONNAIRE WERE TESTED, EXCEPT THERE WAS A SIGNIFICANT DIFFERENCE BETWEEN THE MEAN SCORES OF THE 31-36 AND 37-42 YEAR AGE-GROUPS AT THE 0.05 LEVEL OF SIGNIFICANCE.

THE BILLET EVALUATION QUESTIONNAIRE (APPENDIX C) WAS ADMINISTERED TO TWENTY-SEVEN NAVAL POSTGRADUATE SCHOOL STUDENTS IN THE INFORMATION SYSTEM (TELECOMMUNICATIONS) MANAGEMENT CURRICULUM. THE RESULTS WERE USED TO ASSIGN THE JOB INDEX (VARIABLE 6) FOR THE ANALYSIS. THE DISTRIBUTION OF THE RESPONSES BY THE 27 STUDENTS IS PRESENTED IN APPENDIX C ALONG WITH THE SCORE THAT WAS USED FOR THE JOB INDEX FOR A PARTICULAR BILLET. BECAUSE THE NUMBER OF STUDENTS RESPONDING TO THE QUESTIONNAIRE WAS SMALL, THE INDEX ASSIGNED MAY BE OF DOUBTFUL SIGNIFICANCE.

#### B. INTERPRETATION OF THE RESULTS.

THE CAREER DEVELOPMENT LEVELS AND THE HIGH PERFORMANCE CHARACTERISTICS, PRESENTED IN FIGURES 1 AND 2 RESPECTIVELY, ARE GENERALIZED STATEMENTS OF CAREER DEVELOPMENT AND HIGH PERFORMANCE WHICH WERE APPLIED BY DALTON AND THOMPSON TO THE ENGINEERING, BANKING, ACCOUNTING AND UNIVERSITY TEACHING FIELDS. THE MAJOR DIFFERENCE NOTED BETWEEN THIS SAMPLE AND THE FINDINGS FROM OTHER FIELDS MAY BE THE DEGREE OF MOBILITY THAT WAS VIEWED AS A CHARACTERISTIC OF HIGH PERFORMANCE. IN



THIS STUDY, MOBILITY WITH RESPECT TO THE MACRO-ORGANIZATION, U.S. NAVY, WAS NOT SEEN AS A HIGH PERFORMANCE ATTRIBUTE. PERSONNEL RECEIVING OTHERWISE HIGH EVALUATION SCORES WERE RATED LOW ON THE MOBILITY SCALE.

THE STATISTICS PRESENTED IN TABLES I AND II ARE SELF-EXPLANATORY. THE INTERPRETATION OF THE CORRELATION COEFFICIENTS PRESENTED IN FIGURE 3 AND THE STEPWISE LINEAR REGRESSIONS PRESENTED IN FIGURES 4 THROUGH 9 WILL BE DISCUSSED NEXT.

THE HIGH CORRELATION COEFFICIENT AND POSITIVE SLOPING CURVE FOR AGE (VARIABLE 1) AND PAYGRADE OR RATE (VARIABLE 2) WAS EXPECTED SINCE AS THE RESPONDENTS WERE ADVANCED IN RATE THERE WAS AN ATTENDANT INCREASE IN AGE.

THE HIGH CORRELATION BETWEEN AGE (VARIABLE 1) AND MEAN TIME BETWEEN ADVANCEMENTS (VARIABLE 3) WAS ALSO EXPECTED SINCE AS THE INDIVIDUAL PROGRESSES UP THE ADVANCEMENT LADDER THE SPACE OR YEARS BETWEEN RATES INCREASES. THIS FACT WAS PRESENTED IN SECTION III.C.3. THE POSITIVE CURVE OF FIGURE 5 ALSO DEMONSTRATES THIS PHENOMENON.

THE APPARENT LACK OF CORRELATION BETWEEN AGE (VARIABLE 1) AND EDUCATION LEVEL (VARIABLE 4) RESULTED FROM THE LACK OF VARIABILITY IN EDUCATION ATTAINED AS DEMONSTRATED BY THE STANDARD DEVIATION OF 0.961 FOR THE 182 OBSERVATIONS OF THIS STUDY.

HIGH CORRELATION AND THE POSITIVE CURVE FOR AGE (VARIABLE 1) AND YEARS SINCE LAST ADVANCEMENT (VARIABLE 5) PRESENTED IN FIGURE 6 WAS ALSO INTERPRETATED TO RESULT FROM THE ADVANCEMENT CRITERIA DISCUSSED IN SECTION III.C.3., AND THE PYRAMID ORGANIZATION STRUCTURE OF THE NAVY'S ENLISTED COMMUNITY.

THE DEGREE OF CORRELATION OF AGE WITH JOB INDEX, CONTINUUM, AND "ALL OR NOTHING" SCORES ON THE THOMPSON AND DALTON EVALUATION QUESTIONNAIRE WAS CONSIDERED WEAK AND THE NEARLY ZERO-SLOPING CURVES OF THE REGRESSION OF THESE VARIABLES (FIGURES 7, 8, AND 9) ARE INTERPRETATED TO BE A RESULT OF THE SMALL SAMPLE SIZE.



THE HYPOTHESIS THAT MEAN TIME BETWEEN ADVANCEMENTS AND YEARS SINCE LAST ADVANCEMENT (VARIABLES 3 AND 5 RESPECTIVELY) WERE RELATED TO PERFORMANCE EVALUATION (VARIABLE 7) WAS WEAKLY CORRELATED AS DEMONSTRATED BY CORRELATION COEFFICIENTS OF 0.30 AND 0.26 IN FIGURE 3.

THE GROUPING OF EVALUATION SCORES INTO THE FOUR AGE-GROUPS RESULTED IN THE MOST INTERESTING REPRESENTATION OF THE DATA COLLECTED. THE 18-24 YEAR AGE-GROUP RECEIVED A SIGNIFICANTLY LOWER MEAN SCORE THAN THE 25-30 AND 31-36 YEAR AGE-GROUPS. HOWEVER, THIS GROUP'S (18-24) MEAN SCORE WAS NOT SIGNIFICANTLY LOWER THAN THE 37-42 YEAR AGE-GROUP'S MEAN EVALUATION SCORE. THIS WAS TRUE WHETHER CONTINUUM OR "ALL OR NOTHING" EVALUATION SCORES WERE COMPARED. THIS FINDING WAS INTERPRETATED TO RESULT FROM THE TENDANCY BY EVALUATORS TO RATE THE MIDDLE-AGE-GROUPS (25-36 YEARS) HIGHER THAN THE YOUNGER-AGE- (18-24 YEARS) AND THE OLDER- AGE-GROUPS (37-42 YEARS). THE YOUNGER PERSONNEL MAY NOT HAVE DEMONSTRATED A CAREER COMMITMENT AND MAY BE VIEWED BY EVALUATORS AS "CITIZEN-SAILORS" FULFILLING SOME COMMITMENT OR MERELY TRANSIENTS WITHIN THE PROFESSION. THE LONGER SERVICE PERSONNEL MAY BE VIEWED AS MERELY FINISHING THEIR TIME TO RETIREMENT AT 20 YEARS. THEREFORE, THEY ARE NOT SEEN AS HIGHLY VALUED, PRODUCTIVE MEMBERS OF THE ORGANIZATION.

THE MIDDLE GROUPS MAY BE VIEWED BY EVALUATORS AS CAREER COMMITTED, HIGHLY PRODUCTIVE PERSONNEL SINCE THEY FILL THE ACTUAL OPERATIONAL LABOR FORCE AS SUPERVISORS OF MESSAGE CENTERS, TECHNICAL CONTROL FACILITIES, OR MAINTENANCE FACILITIES. IN CONTRAST, THE 37-42 YEAR AGE-GROUP MAY BE VIEWED AS NON-CRITICAL SUPERVISORY PERSONNEL SINCE THEY MAY BE INVOLVED IN A PLANNING OR CLERICAL MANAGEMENT FUNCTION RATHER THAN DAY-TO-DAY OPERATIONS.

THE SIGNIFICANCE OF THE DIFFERENCE OF MEANS BETWEEN THE 31-36 AND 37-42 YEAR AGE-GROUPS ON THE "ALL OR NOTHING" EVALUATION SCORE MAY IMPLY THAT LOW PERFORMANCE FOR THIS





SAMPLE OF TELECOMMUNICATIONS PERSONNEL OCCURS AT THE END OF THE MID-THIRTIES. HOWEVER, IT SHOULD BE NOTED THAT THIS DIFFERENCE OF SCORES WAS NOT SIGNIFICANT FOR THE TWO GROUPS ON THE 'CONTINUUM SCORE OF THE EVALUATION QUESTIONNAIRE. THEREFORE, THIS DIFFERENCE OF SCORE MAY MERELY BE INTERPRETATED AS AN IMPLICATION OF LOW PERFORMANCE RATINGS FOR THE 37-42 YEAR AGE-GROUP OF THIS SMALL SAMPLE.



## V. CONCLUSION

DEFINITIVE CONCLUSIONS IN AN ANALYSIS OF AGE AND PERFORMANCE AMONG TELECOMMUNICATIONS PERSONNEL ARE DIFFICULT SINCE IT IS HARD TO MEASURE MOTIVATION LEVELS OF DIFFERENT AGE-GROUPS. THE YOUNGER AGE-GROUPS MAY PERCEIVE HIGH PERFORMANCE AS A MEANS TO ADVANCEMENT WHILE THE OLDER AGE-GROUPS THROUGH THE PROCESS OF ACCULTURATION BY THE NAVAL ESTABLISHMENT HAVE COME TO PERCEIVE PERFORMANCE AS AN INSIGNIFICANT VARIABLE FOR ADVANCEMENT. THIS STUDY FOUND HIGH CORRELATION AMONG THE VARIABLES AGE AND PAYGRADE, MEAN TIME BETWEEN ADVANCEMENTS, AND YEARS SINCE LAST ADVANCEMENT. CORRELATION COEFFICIENTS FOR THE OTHER VARIABLES TESTED; EDUCATION LEVEL, JOB INDEX, AND SCORES ON AN EVALUATION QUESTIONNAIRE, WERE WEAK.

WHEN EVALUATION SCORES WERE DIVIDED INTO AGE-GROUPS THE YOUNGER PERSONNEL (18-24 YEARS) RECEIVED A SIGNIFICANTLY LOWER MEAN SCORE THAN THE 25-30 AND 31-36 YEAR AGE-GROUPS. HOWEVER, THE YOUNGER GROUP'S MEAN SCORE WAS NOT SIGNIFICANTLY LOWER THAN THE MEAN EVALUATION SCORE OF THE OLDER GROUP (37-42 YEARS).

WHEN SCORED ON AN "ALL OR NOTHING" BASIS THE 31-36 YEAR AGE-GROUP RECEIVED A SIGNIFICANTLY HIGHER MEAN SCORE ON THE EVALUATION QUESTIONNAIRE THAN THE 37-42 YEAR AGE-GROUP. THIS MAY INDICATE A BEGINNING OF OBSOLESCENCE AMONG TELECOMMUNICATIONS PERSONNEL OF THIS STUDY. HOWEVER, THE SIGNIFICANT DIFFERENCE BETWEEN THE MEAN SCORES OF THESE GROUPS WAS NOT SUPPORTED ON THE CONTINUUM SCORE OF THE EVALUATION QUESTIONNAIRE.

CLEARLY, MORE RESEARCH IS NEEDED TO IDENTIFY VARIABLES EFFECTING PERFORMANCE AMONG TELECOMMUNICATIONS PERSONNEL. OTHER VARIABLES THAT MAY BE RELATED TO HIGH PERFORMANCE INCLUDE: TECHNICAL BACKGROUND, IN EDUCATION PRIOR TO ENTRY



INTO THE SERVICE, MANAGEMENT SKILLS AND TRAINING, OR PREVIOUS ASSIGNMENTS IN THE NAVY.

SOME AREAS FOR FUTURE RESEARCH ARE :

COMPARISON OF PERFORMANCE RATINGS OF MALE AND FEMALE TELECOMMUNICATIONS PERSONNEL

COMPARISON OF PERFORMANCE RATINGS FOR PERSONNEL AT VARIOUS TYPES OF TELECOMMUNICATIONS ACTIVITIES (AFLOAT VERSUS ASHORE)

COMPARISON OF PERFORMANCE RATINGS FOR PERSONNEL OF COMMUNICATIONS AREA MASTER STATIONS (CAMS) AND COMMUNICATIONS AREA LOCAL STATIONS (CALS)

A LONGITUDINAL ANALYSIS OF HIGH PERFORMANCE TELECOMMUNICATIONS PERSONNEL TO DEVELOP A PROFILE OF SUCCESS



APPENDIX A

LONGITUDINAL ANALYSIS QUESTIONNAIRE

.....  
Date

I. Name..... Rate..... Sex.....Age.....  
Duty Station..... Marital Status .....

II. Service Assignments (Include all duty stations including schools)  
From To Duty Station Billet/Duties  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

III. Advancements (Indicate each rate attained and duties performed)  
Rate Date Duties Performed at this Rate or Billet  
.....  
.....  
.....  
.....  
.....

IV. Education (Include High School, Service Schools, USAFI, College)  
Date School Courses, Degrees, Diplomas  
.....  
.....  
.....

V. Awards (Include Medals, Citations, Commendations, Etc.)  
.....  
.....  
.....

Note: Use back of sheet for additional information or comments on any of the above items. Please identify by item number.





## APPENDIX B

### EVALUATION QUESTIONNAIRE

Name \_\_\_\_\_

In the pages that follow are 33 descriptions of communications personnel engaged in operational communications assignments. Included with some of the descriptions are additional statements, intended to help clarify the description. Following each item is a ten alternative continuum with which the statement may be evaluated in terms of its descriptive accuracy.

Considering the person whose name appears on this sheet, if you feel a statement "describes him or her to a T", indicate with a check mark in the space closest to the "describes very well" end of the continuum. If, on the other hand, the statement does not describe him at all, indicate at the "not at all" end. Any intermediate judgments may be indicated at any point between the two extreme positions.

Try to think about the person being considered as he is right now. If a statement describes an activity in which the person, during his career, has not engaged in, do not consider his potential for such behavior. Try to evaluate each statement in terms of how accurately it describes the man right now.

If you have difficulties with any item, answer as best you can and report your feelings on the item in the "Comments" sections on the last page.

Your time and cooperation in completing these descriptions is greatly appreciated.



1. Designs his own projects and gathers his own information.  
describes very well  / / / / / / / / / /  not at all
2. Thinks about his career, is aware of the options available to him,  
and can see where it all fits in a large perspective.  
describes very well  / / / / / / / / / /  not at all
3. Is a section manager.  
describes very well  / / / / / / / / / /  not at all
4. Is deeply involved in his field; really lives it.  
describes very well  / / / / / / / / / /  not at all
5. Likes variety and change; can adapt quickly and easily to a new  
project or assignment.  
describes very well  / / / / / / / / / /  not at all
6. Has some general area of interest he would like to delve into in  
the next few years.  
describes very well  / / / / / / / / / /  not at all
7. Is an idea man for a small group.  
describes very well  / / / / / / / / / /  not at all
8. Is mobile and will move if he can't follow his interests.  
- follows his interests in spite of his job.  
- if it is necessary to leave the Navy to pursue his own interests,  
he will not hesitate to do so.  
describes very well  / / / / / / / / / /  not at all
9. His frame of reference has enlarged, focusing on society or  
philosophical ideas.  
describes very well  / / / / / / / / / /  not at all
10. Can communicate orally the nature and findings of his work.  
describes very well  / / / / / / / / / /  not at all
11. Find a fit between his own interests and the Navy's  
- aware of both external demands and internal interests  
- will do what his interests and desires dictate  
- initiates a direction  
describes very well  / / / / / / / / / /  not at all
12. Works under the supervision of a more senior communicator  
or manager.  
describes very well  / / / / / / / / / /  not at all



13. Is able to generate enough projects to support himself and a few other people.  
describes very well  / / / / / / / / / /  not at all
14. Can communicate with a senior and sell him a project.  
- has well developed command relations  
describes very well  / / / / / / / / / /  not at all
15. Is deep enough in his work to make significant technical contributions but is working in more than one area.  
describes very well  / / / / / / / / / /  not at all
16. Generates new ideas -- is an innovator.  
describes very well  / / / / / / / / / /  not at all
17. Reads the environment and moves with the trends or ahead of them.  
- is in the right place at the right time  
- has moved with a field  
- is not out of touch with the realities of his environment  
describes very well  / / / / / / / / / /  not at all
18. Has many job-related interactions inside and outside the Navy.  
i. e., frequent correspondence, personal acquaintances, professional organizations, etc.  
describes very well  / / / / / / / / / /  not at all
19. Is an effective right-hand man, carrying the ball for a more experienced communicator.  
describes very well  / / / / / / / / / /  not at all
20. Can organize a project.  
- knows where to go and who to see in order to get something accomplished  
- can put things together  
describes very well  / / / / / / / / / /  not at all
21. Has moved away from personal involvement in technical work.  
describes very well  / / / / / / / / / /  not at all
22. Is seen as a winner; he will come out on top of a challenge.  
describes very well  / / / / / / / / / /  not at all
23. He is constantly learning and improving on his own.  
- has the talent and ability to keep up  
- is constantly looking for new, challenging areas of work  
- doesn't have to be told to develop new skills  
describes very well  / / / / / / / / / /  not at all



24. Has good interpersonal relations -- willing to give and receive help.  
describes very well  / / / / / / / / / /  not at all
25. Goes into great depth on one problem or area.  
describes very well  / / / / / / / / / /  not at all
26. Is honest with himself concerning his talents, abilities, and tasks  
he is doing or has done.  
- recognizes where he stands in relationship to other communicators  
describes very well  / / / / / / / / / /  not at all
27. Is a mentor for junior communicators.  
describes very well  / / / / / / / / / /  not at all
28. Has an effective working relationship with his manager.  
describes very well  / / / / / / / / / /  not at all
29. Is ambitious and aggressive; he will take advantage of opportunities.  
- has to be aggressive -- looks out for himself  
- likes to build something or see things happen  
- is a go-getter -- he needs something to do  
describes very well  / / / / / / / / / /  not at all
30. Nothing he does is entirely his own.  
describes very well  / / / / / / / / / /  not at all





## APPENDIX C

### BILLET EVALUATION

Below are billets typical of those assignments an enlisted communicator may be assigned. Following each item is a five alternative continuum with which the billet may be evaluated in terms of its significance, importance desirability for success of the mission of naval telecommunications. If you consider the billet most critical to the mission of telecommunications indicate with a check mark in the space closest to the "most important" end of the continuum. If, on the other hand, the statement is not vital to the mission of a naval telecommunications activity, indicate at the "not at all" end. Any intermediate judgments may be indicated at any point between the two extreme positions.

1. A managerial position as a division officer, such as maintenance or message center division  
Most important 11/10/ 4 / 2 / 0 Not at all 5
2. A managerial position as Leading Chief Petty Officer or Leading Petty Officer of a division, such as maintenance, control, or message center division.  
Most important 18/ 7 / 1 / 1 / 0 Not at all 5
3. CAMS Watch Officer  
Most important 7/ 8 / 10 / 2 / 0 Not at all 3
4. CAMS Watchstander or Operator  
Most important 5 / 13/ 8 / 1 / 0 Not at all 4
5. Transmitter Watch Supervisor  
Most important 10/ 12/ 3 / 2 / 0 Not at all 4
6. Transmitter Watchstander of Operator  
Most important 4 / 14/ 8 / 1 / 0 Not at all 4
7. Receiver Site Watch Supervisor  
Most important 12/ 9 / 5 / 1 / 0 Not at all 5
8. Receiver Site Watchstander or Operator  
Most important 4 / 13 / 8 / 2 / 0 Not at all 4
9. Technical Control Supervisor  
Most important 12/ 11/ 3 / 0 / 1 Not at all 5



10. Technical Control Watchstander or Operator  
Most important 4 / 12 / 10 / 0 / 1 Not at all 4
11. SATCOM Terminal Supervisor  
Most important 12 / 8 / 7 / 0 / 0 Not at all 5
12. SATCOM Terminal Watchstander or Operator  
Most important 4 / 15 / 8 / 1 / 0 Not at all 4
13. Message Center Supervisor  
Most important 11 / 10 / 6 / 0 / 0 Not at all 5
14. Message Center Watchstander or Operator  
Most important 3 / 16 / 8 / 0 / 0 Not at all 4
15. Maintenance Supervisor  
Most important 12 / 11 / 2 / 1 / 1 Not at all 5
16. Maintenance Operator  
Most important 6 / 13 / 5 / 2 / 1 Not at all 4
17. Non-communications billet assignment, such as student,  
Master-at-Arms, Permanent Shore Patrol, OOD,  
JOOD  
Most important 0 / 1 / 5 / 10 / 11 Not at all 1

How would you rate the following duty assignments in terms of being the most demanding of an enlisted communicator.

1. Major ship, such as CVA, CA, CLG, LPH, Flag Configured Ship.  
Most demanding 8 / 10 / 5 / 2 / 2 Least demanding
2. Other types of ships, such as DLG, DDG, DD, Amphibious, etc.  
Most demanding 13 / 7 / 6 / 1 / 0 Least demanding
3. Assignment to a NAVCOMMSTA which is a Communications Area Master Station (CAMS).  
Most demanding 5 / 8 / 7 / 7 / 0 Least demanding
4. Assignments to a NAVCOMMSTA which is a Communications Area Local Station (CALS).  
Most demanding 3 / 5 / 6 / 11 / 2 Least demanding



5. Assignment to a Numbered Fleet Commanders Staff, such as COMSEVENTHFLT, COMSIXTHFLT.  
Most demanding 7 / 5 / 12 / 3 / 0 Least demanding
6. Assignment to a Squadron, Group, or Flotilla Staff.  
Most demanding 3 / 4 / 16 / 4 / 0 Least demanding
7. Assignment to a shore staff, such as COMNAVTELECOM, NAVELECSYSHQ, CNO.  
Most demanding 2 / 4 / 6 / 11 / 4 Least demanding
8. Assignment to a Reserve Training Center  
Most demanding 0 / 1 / 3 / 5 / 18 Least demanding



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